United States
Environmental
Protection Agency

US Army Corps
Of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

LONG ISLAND SOUND
DREDGED MATERIAL DISPOSAL EIS

Working Group Meeting #1

Old Lyme, CT
July 19, 2000

October, 2000

9000184-2000-WG07-1

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1.0 INTRODUCTION/OVERVIEW

The U.S. Environmental Protection Agency, Regions I and II (EPA), and the U.S. Army Corps of Engineers, New England District (the Corps), are proceeding with the preparation of an Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA). The EIS will consider the potential designation of one or more dredged material disposal sites in the waters of Long Island Sound (LIS) under Section 102(c) of the Marine Protection, Research, and Sanctuaries Act (MPRSA) and 40 CFR 230.80 of EPA's regulations under section 404 of the Clean Water Act (CWA). Prior to making a decision on designation, the EPA is required to evaluate the environmental and socioeconomic impacts of a range of alternatives for disposal of dredged material in the waters of LIS. In conducting this evaluation, NEPA requires that the public be given the opportunity for input in the scoping of analyses and review of the EIS.

At public workshops held in April 2000 in Port Jefferson, NY and Groton, CT, the public was invited to participate in working groups in the development of the LIS Dredged Material Disposal Site Designation EIS. Those who volunteered were subsequently invited to attend a meeting to be held in Old Lyme, CT on July 19, 2000. The meeting was arranged by Ann Rodney, EPA by a notice dated June 20, 2000 (Appendix A). As noted in this announcement the Corps and EPA decided that there will be only one working group to discuss all topics. This is the first working group meeting since the April meetings in Port Jefferson and Groton.

The purpose of the meeting was to present and discuss the economic and environmental approaches (agenda included in Appendix A) being taken to: the selection of alternatives to be analyzed in the EIS; the information to be analyzed in the characterization of the existing environment; the no action alternative; and the analysis of impacts.

Twenty seven individuals attended (Appendix D).

Ann Rodney facilitated the meeting and began with a brief discussion about the evaluation criteria scoring ballots that were received which had been provided at the April workshop. Many had commented that the criteria chosen in the ballots were appropriate but that the scoring was unclear. Ann indicated that the scoring will not be used as a statistical measure but as a theme or an overview. Also, we need more diversity from marine and environmental interests on the working group. There may be some recruitment effort to bring in more diversity.

2.0 DISCUSSION

Following each presentation the floor was opened to questions, comments and other discussion. Questions raised and comments made by working group are shown in italics and responses, if given, in normal type face. In some instances no responses were necessary and the comments will be considered in the development of the EIS. The morning session covered the approach to the economic analyses and the afternoon session, the approach to the environmental analyses. During the discussion those issues not directly related to the economics or environmental areas were also recorded and are included at the end of this section.

Following the meeting a draft copy of this report was distributed to the working group. Three responses were received and are included in Appendix E. Revisions to text, in response to comments received, are bracketed by asterisks (*) and printed in bold type to highlight where changes have been made.

2.1 ECONOMICS

Ed O'Leary, Corps of Engineers, New England District presented the major tasks related to economic analyses (a copy of the complete presentation is included in Appendix C):

1. Identification of Navigation Dependent Facilities – 100% Coverage
2. Survey of Facilities – Phone, mail, in person
3. Determination of Dredging Needs and Future Quantities
4. Estimate Economic Significance of Navigation Dependent Facilities – Model
5. Conduct Analysis of Socioeconomic Impacts of Disposal
6. Prepare Economic Appendix and Socioeconomic Portions of DEIS

Economic Discussion:

1. Who will do the economic studies?

Potentially WEFA, a subcontractor with ENSR, will do the modeling with support on the survey work from ENSR. WEFA is a firm based in Washington DC who is highly qualified for this type of work and has recent experience in a study of the viability of developing a post-Panamax port operation at Quonset Pt. RI.

2. ***Can the work group review the economic subcontractor's qualifications. Can they get background information or at least have input to the RFP?***

Contracting regulations do not permit public involvement in the contractor selection process. Once the contractor is on board then the workgroup can discuss the effort. The work plan for economic studies has been distributed and may be reviewed and commented on by contacting EPA or the Corps. This work plan constitutes the scope of work.

3. Will a cost/benefit analysis be done for a clean vs dirty LIS? Does WEFA have this capability?

ENSR will be doing the environmental analysis and potentially WEFA the economic modeling work. The objective of the economic work is to estimate the economic significance of navigation dependent industries to the regional economy. The environmental analyses will address the environmental effect of dredged material disposal in open water compared to other alternatives.

4. ***There is concern for the economic impact on fishing, property values, recreation, etc. if dredging stops or is greatly diminished. What will the economic impact be for the no-dredging project condition?***

The current study will evaluate the no-action scenario which means that no disposal sites would be designated. The EPA and the Corps recognize that a no open water site designation would greatly reduce dredging in LIS. The economic effects of reduced or no dredging will be assessed as a result of no open water sites being designated.

5. ***There is a lot of concern about the lack of dredging due to costs, regulatory matters, seasonal restrictions and increasing standards.***

No response is required here, however this issue will be evaluated in the EIS.

6. ***What about non-commercial dredging such as private property owners? How will they be identified? Also, there are boat launching ramps that are not commercial or government owned. Are ferries, including the high speed ferry included? Also, some properties have been subdivided and now have several owners.***

All dredging dependent facilities, including privately owned, will be included in the analysis. Existing databases and inquiries may locate the majority of facilities including private. Historical permit records will show ownerships.

7. 100% of existing facilities will be surveyed. What about the future?

The EPA and the Corps will factor in future dredging plans for the surveyed facilities. The EIS will also review permit applications pending, and community coastal area management, harbor management and master plans in the identification of potential future needs.

8. ***Connecticut River dredged material is not currently going to LIS sites. In the future riverine dumping will not be allowed. This is a major navigation channel. Will the economic study cover the Connecticut River?***

The Connecticut River, below Hartford, will be included as part of this study. The EIS will factor in *__potential changes in policies related to riverine, upland disposal and other historic practices that may no longer be feasible.*__

9. A reality check is needed for the questionnaire to be used. Experience shows that respondents may not bother or may respond in a way to influence decisions to their benefit. Make it simple and try it out on someone unfamiliar with the study. The questions may lead with a cost such as what would you do if the dredging cost was a $ X per cubic yard. Using zero is as unrealistic as is a high number. The economic results may show overinflated estimates from the surveys which may result in very large disposal needs. The costs may be so high that projects may be pushed off into the future. There is a concern that the questionnaire could be flawed yielding statistical errors. What is the quality control for the survey? Some people will not talk to the surveyors.

We may use a range of costs. We need to get a clear picture of what the dredging needs are regardless of costs as well as a prediction of what dredging will likely be done at different cost levels. If there is a perception that the result may put them out of business then their response, if any, will not be realistic. We plan to test the questions in a pilot study before general use

10. Academic institutions (e.g. University of Michigan, University of Oregon) have tried and true economic models including those for small harbors. Why not use those? Also, there have been economic studies done for LIS.

The subcontractor will check existing studies and model results from others.

11. There is a continuous ratcheting of criteria up or down. One disposal site may work now but not be allowed later. The criteria and testing keeps changing. This needs to be a factor in the economic evaluation.

The costs of testing will be taken into account within the economic information.

12. The economic study must look at the life cycle over 20, 30, 50 years. Work everything back to present value.

That approach is used by the Corps. *__A 25-year period is a standard used by the Corps__.* An economic projection to year 2025 is envisioned.

13. Energy costs are important and must be factored into the life cycle model.

Energy costs, as factored into the costs of disposal (e.g. transportation costs) are included in the analyses.

14. Rising sea level must be factored into the life cycle economics. Erosion and a 1 ft sea rise in 50 to 100 years may reduce dredging or increase it. Someone may have to revisit the economic model every few years to make adjustments.

15. Environmental windows are getting smaller and restrict dredging. Type of equipment and size is important. Local dredgers have a backlog of projects to complete in a short timeframe.

Suitability of dredged material is a factor. We need to estimate the suitability for volume projections. Most material is maintenance. There is a need to link dredging needs to the economic model.

16. There is a major concern about the deep draft harbors. Some have national security importance. Subs at New London and Groton are critical. This has to be factored into the model.

This will be considered in the economic analysis regarding need for the designation of disposal site(s).

17. What is the timeframe or scale for the economic study? Eventually LIS will fill in. Western LIS has unsuitable material now. Capping material is getting harder to find at a reasonable price. Shoreline development seems to be increasing sediments into LIS.

Normally economic evaluations look at a 20 to 25 year timeframe. For some harbors with high siltation rates, a few years is important in others it's 20 or more years.

18. Will there be a matrix of all factors used in the economic model? This should be done, then prioritized. If this is not possible then there may have to be several models. It is suggested that the factors be presented and let the work group prioritize them.

The economics experts plan to meet with the group prior to the survey process.

19. Connecticut DEP should be involved in the economic evaluations.

NY and CT will have input to the economic evaluations.

20. There is a limit on the amount of dredged material that can reasonably be removed. There are three dredging contractors and limited environmental windows which seriously constrain what can happen.

This will be considered in refinement of the economic approach.

21. Look at the history of dredging. It is limited by cost. Less will be done in the future. The questionnaire will be meaningless.

Comment is noted.

22. As the price for dredging goes up actual dredging goes down. Some hope that it get it goes high enough so that upland disposal becomes feasible. The cost per cubic yard controls. At some point it reaches a level where dredging stops.

This is a critical relationship in the economic model. The model will attempt to establish the relationship between the cost of dredging and quantities to be dredged. This result will then feed back into the regional impact model to assess the impact of dredging on the local economies.

23. As costs go up boat owners change their lifestyle. The outer Mamaroneck Harbor used to be full and now it is empty. All costs are going up including dredging. Marinas will go out of business. In NJ a number of marinas have become single homes. The cycle of dredging is important and varies considerably from harbor to harbor.

Comment is noted.

24. Maintaining LIS' deep ports is a must. This is needed to keep navigation safe and keep oil prices from going up due to offloading and other measures. Other ports are going deeper to 40 or 50 feet. CT ports are having a hard time maintaining 35 feet. Maintenance is needed just to remain competitive.

Comment is noted.

25. Real estate values have remained somewhat level. Conversions to condos should not be an issue due to restrictions. If marinas go out of business the property would probably go to single-family or two-family *residential units*.

Comment is noted.

26. Will the economic analysis consider the case where shipping shuts down and alternative transportation is substituted?

Yes.

****27. Comment received after the meeting – The Sound has a significant number of small boat harbors and small commercial facilities. This needs to be emphasized in the economic review.***

The economic analysis, will cover 100% of the dredging dependent facilities including small boat harbors and other commercial facilities.*

2.2 ENVIRONMENTAL

Dave Tomey, EPA Region 1, presented an overview of environmental studies (a copy of the presentation is included in Appendix C) The major points are:

1. Open Water Sites
2. Upland/Beneficial Use Sites
3. Evaluation of Treatment Technologies

Drew Carey, Coastal Vision, presented an overview of activities related to finfish (copy of presentation included in Appendix C). The major points are:

Environmental Evaluation – finfish

1. Fisheries Resources – CT DEP data available as well as NY, RI and NMFS. A NOAA report was just released for 1984 –94. There is a better method of bottom classification as it relates to finfish utilization. The CT trawl data does not cover all areas of LIS. Some areas can not be trawled because of fixed gear, bottom conditions etc. They use a 1 mile by 2 mile grid. Results are grouped by areas of similar physical conditions. Our study will supplement the CT DEP work.

2. Bioaccumulation

3. Fishing Activities – The questionnaire has been developed but we don't anticipate much work during the summer when fishermen are busy. We will try to work through the various organizations to get results.

Finfish Questions and Discussion

1. ***Are you using NMFS data? There is trawl data for Gardners Bay and Block Island Sound, none of their trawls sample into LIS proper.***

2. ***What are you measuring for bioaccumulation?***

For winter flounder – liver and fillet. Other fish – just fillet. We are measuring bones for Strontium 90.

3. ***Is sampling for one day or over time?***

These will be single event snapshots. A second sampling will take place in both June and September.

4. ***What if that one fish just came from somewhere else? How will you know?***

We will not be able to determine where each fish spends its life, however, if we found uniform results all over the sound then we won't do more samples. We will be archiving extra samples and can always analyze these frozen samples to get more data. When we review the results we can look at the lobster, benthic and sediment results as well. If all show a certain level then there would be a probable connection. Any source of data should not be considered by itself but in combination with others.

5. ***Why aren't you using reproductive organs in the bioaccumulation work? There is a global concern for chemical disposal (estrogen types) which impact reproduction in animals. This should be part of the EIS.***

The liver is usually the best indicator since contaminants tend to be retained there. Fillets are used for assessing public health. The endocrine– disrupter estrogen effects are related to sewage outflows not dredged material disposal. This will not be included in the EIS. EPA does not have enough dose/response data to evaluate risk of potential endocrine disrupting chemicals.

6. ***Fishers Island representatives are pleased that the analysis will look at flounder. Flounder spend most of their time in the sediments and should pick up material if it is there.***

Comment noted.

7. ***At the New London site there must be prop wash impacts at the site. Submarines from the base transit directly over the site about 36 feet down. The dump site is only 15 feet below very large props. We should consider the impact of the prop wash on the bottom.***

Further detail on this comment may be found in a letter received from Fishers Island Conservancy, Inc included in Appendix E. Prop wash will be a consideration in the analysis of impacts of dredged material disposal in LIS.

Dr. David Mitchell, ENSR, presented a summary of the studies to evaluate Benthic Resources and Lobsters. The major points are (copy of presentation included in Appendix C):

Lobster Tissue Collection:

1. Purpose of Collection and Analysis
2. Lobster Health Issues
3. Sampling Locations
4. Lobster Collection
5. Tissue Data Comparisons
6. Lobster Collection Schedule

Benthic Tissue Collection:

1. Purpose of Collection and Analysis
2. Survey Location
3. Benthic Fauna Collection
4. Benthic Tissue Analysis
5. Tissue Data Comparisons/Uses
6. Benthic Collection Results
7. Supporting Benthic Investigations

Dave Tomey added that all analyses are tied together (i.e., sediment triad of toxicity testing, Sediment chemistry, and benthic community analyses). The sediment, lobster, fish, and benthic work follow good sampling design. The combined results provide good information and follow a tried and true approach.

Benthic Resource and Lobster Approach Questions and Discussion

1. ***Are you sampling only at dump sites? Dredged material disposed at a site may bring in life from elsewhere (clams from Five-Mile River) that may be unrepresentative of conditions at the site. Also, sediments (and the chemicals they contain) coming in from rivers may be causing impacts that are blamed on dredged material disposal. What you are measuring may not be correct.***

We have years of records of dredging operations and many sources of data from several trophic (feeding) levels (i.e., benthos, lobster, finfish). We are also sampling reference sites away from the disposal sites. We are confident that we are measuring ambient levels at reference locations and are able to isolate the impacts of disposal sites.

2. ***Lobster sampling seems to be concentrated in western LIS. There is shell disease in lobsters in the eastern LIS. Will the sampling cover the shell disease? Dr. Prince from the University of Maine could contribute to the effort. There is a higher incidence of shell disease near the New London disposal site. The RI lobstermen found shell problems near a Navy disposal site.***

Bioaccumulation work does a lot of analyses on a few samples. Assessment of the shell disease problem requires a much larger sample than we can provide via bioaccumulation sampling (up to 25 per site). We will do a visual check on the samples we do take and results will be publically available.

3. ***A more scientific approach is to investigate what dredgers are doing – where the material is coming from and where it is going.***

Dredgers will be interviewed regarding many aspects of the existing environment and impacts analyses.

4. ***There seem to be many studies going on. Is everyone talking to each other to avoid redundancy? We need a strategic plan -–not just dredging and disposal.***

The purpose of this EIS is to collect and analyze sufficient information to determine the environmental and socioeconomic impacts of the decision to designate an open water site(s) for disposal of dredged material in LIS. This is not a comprehensive dredged material management plan. We are sharing the information collected and analyzed with others conducting analyses for other purposes.

5. Between sampling events other activities are taking place which could impact the results.

We are sampling at recently active and historic disposal sites to get a “snapshot” of current conditions. We are aware of the activities and will consider them as needed.

6. Normal harbor activities resuspend sediments all the time. Resuspended contaminated material must be impacting LIS and probably more than disposal sites (capped or uncapped).

7. After all of these studies what do we get?

The current studies are to gather baseline data. This had to be done now to meet our EIS timeline and move into the site screening and impact analysis phase.

8. Will there be testing in shallow areas and testing in harbors?

The purpose of these studies is disposal site designation. The "no-action" alternative is the absence of a designated disposal site(s). We are not looking at specific projects and will therefore not test in harbors or other areas that are not disposal sites or potential disposal areas.

9. Will the benthic and lobster studies measure uptake from disposal sites?

Yes. However, lobster and finfish will have less correlation than benthic or sediment results because they are more mobile.

10. You should sample historic disposal sites that are closer to sources of dredged material.

If they are identified through the screening process as candidate sites then more work may be done on them.

11. Are you going to look at many disposal sites or just a few?

We are hoping to come up with just a few sites, although these would be screened from a greater number of sites.

2.3 OTHER TOPICS

During the discussions of the agenda topics other issues were brought up that did not fit into the economic or environmental categories but were pertinent to the LIS EIS work:

1. How do you factor timing into ocean work? Distance is not as important as transit time. Some disposal sites may be closer than others but the transit time could be significantly high because of fighting the tides.

This is an important issue for alternative disposal site evaluations, not the economic survey and modeling or environmental testing and analyses.

2. Capping is an issue. Since LIS is shallow it is feasible.

3. ***There are flyovers (photos) that can be used to show development impacts. New London just completed a survey (GIS). Groton also has GIS.***

4. ***Why are there so many disposal restrictions on the Connecticut River?***

EPA and the Corps indicated that there have been land ownership changes. New owners are not as friendly on land disposal. EPA and the Corps have also imposed some restrictions due to material suitability or impacts on habitat.

5. ***Federal funding has an impact on what dredging will be done. Political issues can pass or fail. How much government help is realistic? Can not see the government helping the marinas.***

It is important to find out what is important today related to funding. We can use a range for the future. We recognize that large amounts of government funding can have major impacts on directions and the economics.

6. ***Most dredging is maintenance. There is very little improvement dredging. Corps and DEP records will show this. However, the footprint of dredging is more important than the volumes.***

7. ***Our "wants" have become our "needs". Someone's "wants" may not be a "need". There will be differences of opinion.***

8. ***Population projections should be used? There are major population changes along the waterfront. Changes are not necessarily following plans.***

9. ***For the upland disposal alternative – will the high water content of the material, dewatering, land impacts be factored into the costs? Also, there is a need to assess availability of land and dewatering space.***

Yes. Each individual disposal alternative will include a cost estimate for all factors including processing and handling.

10. ***It is hard to get a permit from CT DEP for hydraulic dredging due to high turbidity etc. If sand and gravel are found then CT calls it mining and wants payment. We can't win. CT dredge areas are mostly mud whereas NY has lots of sand and gravel.***

11. ***Who will pay. The cost of testing material is high. If it has to go upland it will get too expensive to dredge therefore the contaminated material will stay in the harbor. Distance to sites may be based on a willingness to pay rather than miles.***

We will look at how many sites we need and what reasonable distances there are. There are about 20 historic sites that were closed down to 3 in the 1980's. To minimize impact to the environment, we prefer to reduce the number of sites rather than increase them but we will consider the other historic sites in the site selection process.

12. If the results of these studies show that sites are not good and that open water disposal in LIS is no longer available don't you have to change the EIS to a no-dredge alternative. Dredging will stop if there are no economical disposal sites. As a result you should consider the impact of the contaminated material that will remain exposed and continue to accumulate in LIS. This impact would be a factor even if just one disposal site is shut down.

The EIS will address the impact of no designation of disposal site(s) in LIS which have a secondary effect of reduced dredging. To some extent, the above concern should be addressed through the development of a comprehensive dredged material management plan. The testing and evaluation of each harbor is beyond the scope of this EIS.

13. Have you ruled out ocean sites?

No, they will be considered in our site screening process.

14. What is next step?

Notes from this meeting will be distributed in late August. We will start physical oceanography work in September. There will be no site screening before September. We will schedule the next working group meeting when we have something to report. There is a lag time between data collection and the analysis.

15. Are you going to look at mitigation?

Yes. Mitigation such as seasonal restrictions will be addressed in the site monitoring plans for each site will be included in the EIS.

16. Safety of seamen must be considered. Don't force disposal into the winter months.

17. You have to consider the no-dredge impact. It is getting impossible to dredge anymore. You have to address the economic impact of this. The dredging business will go down.

This will be considered as a secondary impact of the no open water site designation.

18. Will the GIS work be for the entire LIS or be site specific?

The GIS coverage will be for the entire LIS and as needed for site evaluation.

19. What about island creation? Is that an option?

We may look at land extensions etc. and review studies done by the Corps in the 80's. There are, however, major concerns about loss of wetlands which may make island creation difficult to impossible to implement.

20. Could dredged material targeted for upland disposal be used for things such as airfield construction?

The geotechnical properties of dredged material limit its uses as an engineering material. Uses will be evaluated in the EIS.

21. What about thermal technologies where bricks are made from dredged material?

Brookhaven Lab is doing evaluations of this for the New York District of the Corps and the EPA. This and other treatment technologies will be evaluated in the EIS.

22. The sediment quality is the result of historic dumping and present owners who inherit this material should not have to pay for it's high cost. The agencies (states) that allowed this dumping should pay. Also, you have to address the upland changes that cause problems in the harbors. As population grows so will these impacts and the dredging issues will continue.

3.0 WRAP-UP

Ann Rodney announced that a draft of the notes of the meeting would be distributed for comment. Three comment letters were received and are included in Appendix E. As indicated in the introduction to the previous section, some revisions have been made in response to those comments.

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APPENDIX A

MEETING ANNOUNCEMENT AND PRE-MEETING PACKET

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US ENVIRONMENTAL PROTECTION AGENCY
REGION I
1 CONGRESS STREET, BOSTON, MA 02114-2023

MEMORANDUM

DATE: June 20, 2000

SUBJ: Working Group Information

FROM: Ann Rodney AR.

TO: LIS EIS Working Group

Thank you for volunteering to participate on a Work Groups for the Long Island Sound (LIS) Environmental Impact Statement (EIS) development and process..

This packet contains information that we ask you to review and be prepared to discuss at the first Working Group meeting. The first Working Group meeting will be 10:00am-4:00pm, Wednesday July 19, 2000 at the CT DEP Boating Safety Office in Old Lyme, CT (directions attached & thank you to Joe Salata for setting this up!)

In this packet are:
1. A list of the Working Groups, names and addresses.
2. Copies of the ballots that were completed and a tabulation summary.
3. Outline of the approaches for the economics and environmental evaluations (additional information in the Workplan sent out previously).
4. Directions to meeting.

WORKING GROUPS:
Originally, EPA and the Corps anticipated 20 or more people in each Working Group, with separate groups for the topics of Open Water, Beneficial Use, Upland, and Treatment Technologies. However, a total of approximately 35 people signed-up for the all the Working Groups. EPA and the Corps believe this is a manageable number of people to have meaningful discussions on all the topics. In addition, it was stated several times in conversations with me, that the topics were so integrated they needed to be discussed together. EPA and the Corps have decided to have one Working Group that will discuss all topics.

At this time, the composite of the Working Groups consists of more than 50% Marina interests. In order to balance the make-up of the Working Groups, EPA and the Corps will be inviting various other organizations to participate in the Working Group. Please contact me should you have any suggestions as to who else should be involved.

We hope to communicate using letters, e-mails and meetings.

(More)

BALLOTS:
Thank you all for taking the time to go through these ballots! We understand that this was a very difficult exercise. All comments on the ballot stated: "it's too confusing & difficult". In this vein, we have chosen to use the ballots in a limited manner. As you can see there are overarching themes that do come through (please see tabulation summary). We will be using the ballots a guide line as we continue through the EIS process. The ballots are enclosed so you can get an idea of what others are thinking.

ECONOMICS AND ENVIRONMENTAL:
The enclosed outlines are the general approaches as to how we will be developing the economics and environmental evaluations for the EIS. These topics have been discussed in general at the workshops held in October 1999 and April 2000. The first Working Group meeting will give EPA and the Corps a chance to present these approaches in depth and then exchange ideas and information on both the economics and environmental aspect of the EIS.

COMMENTS RECEIVED:
We have received many comments from the majority of you over the past year. Your comments are part of the record and have been reviewed by the EPA and Corps EIS team. We have not responded specifically to each and every comment, but have incorporated some of your comments as we go along. As stated at previous meetings, EPA and the Corps have the ultimate responsibility in making any decisions. However, your suggestions and comments can, and have guided and assisted us. We look forward to your suggestions.

NEXT STEPS:
The next step we are asking you to take is to attend the full day meeting (10am-4pm) on Wednesday July 19, 2000. The discussion we plan to generate will be on the economic and environmental approaches which are enclosed in this packet. We will have a minor discussion on the ballots and the makeup of the Working Groups. We plan to give a short presentation on both approaches and then open it up for your discussion. We hope to have this as an open exchange of ideas, and not as formal has our workshops have been.

Directions to the meeting are enclosed. As stated above, we anticipate this meeting to last from 10am to 4pm. There are NO food or lunch facilities near or around the meeting space, please bring any snacks, drink and food you may need for the day.

Please contact me at the address below should you have any suggestions on the meeting.

I will be contacting you in the near future to confirm you received the information and will be attending the meeting.

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The following is a list of people who have signed up for the Working Groups. The information on the list is what was written on the White cards you turned in. I would like to remind you of the Privacy Act Statement that was on the back of the cards:
"Under the provisions of the Federal Privacy Act of 1974 (5 U.S.C. 552a), furnishing the information requested on the reverse side of this card is voluntary. All information provided becomes part of the public record and, as such, will be available for disclosure to the general public. Information requested on this card is used to compile a record of attendance and to provide a mailing list for the purpose os sending further information on this project, if required."
Please be respectful of this information.

OPEN WATER DISPOSAL

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United States Environmental Protection Agency

Evaluation Factors - April 2000

US Army Corps of Engineers
New England District

LONG ISLAND SOUND DREDGED MATERIAL DISPOSAL EIS

BALLOT

TABULATION BALLOT:

This Ballot is the tabulation or summary of all the ballots sent to EPA. All ballot "answers" are on this ballot, with some notes. Master copy.

An example of an overarching theme would be:

(Page one)
Evaluation Approach For Open Water Sites (#1)
Working Draft - April 2000

(Under)
Appropriate Factor? (Yes/No)
for Threatened and Endangered Species

There were 21 yes's counted

valuation of Disposal Alternatives

rnatives

pages, please respond to the following questions

screening and evaluating disposal alternatives?

capture the impact of the factor?

u use to screen out a site for each factor?

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EVALUATION APPROACH FOR OPEN WATER SITES (#1)
Working Draft - April 2000

Evaluation Factor	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
I. Open Water					
1. Threatened and Endangered Species a. Federally Listed Threatened or Endangered Species b. States Listed Rare/Endangered Species or those of State Concern	For both categories assess • Presence – Absence • Relevant species description, range, and migratory patterns • Distance from site	2 3 2 U H M L 0	Yes (21) yes (21)	Yes (16) No (3) Yes (17) (1) Yes (17) (1)	.25 mile .5mi (2) 0 yards .02 mi 0.2 mile (18) (yard/meters) time present distance (mi) /1000' 4 mi precise ?? (presence or prox. to breeding, spawn nurs
2. Archaeological Resource Sites	Presence - Absence, distance from site, expected degree of disturbance	2 H M L 0 U	Yes (21)	Yes (17) No (2)	.25 mile (2) .2 mile (2) 5 statewide water sit 100's yard yards/meters .02mi
3. Designated Conservation Areas a. Federally designated Marine Sanctuaries, Wildlife Refuges, National Seashores & Parks b. State designated Marine Sanctuaries & Preserves or Fish Havens	For both categories assess • Presence – Absence • Distance and downcurrent effect • Relevant species description and range	2 U H M, L, 0	Yes (21)	Yes (16) No (2) Yes (15) No (1) Yes (16) No (1)	1 mile .5 mi (2) High .2 (18) yards/meters 5-10 mi 0 (2) 20' bottom clearance
4. Navigation Considerations a. Marine Shipping/Transit Lanes b. Anchorage Areas & Harbors of Refuge c. Aids to Navigation d. Recreational Navigation	Draft + propwash + buffer = minimum depth Presence – Absence Presence – Absence Draft + propwash + buffer = minimum depth	Min. depth feet U 0 U 0 (1500 ft) Min. depth feet	Yes (21) Yes (20) yes (17) No (3) yes (21)	Yes (19) Yes (16) No (2) Yes (16) No (3) Yes (17) No (1)	.25 mile (2) a 30 m depth H M H CG resp (2) b 10 m " .1 mi (2) .2mi (10) all 1 mile 8' .5 mile 25'
5. Existing Habitat Types a. Mudflats and Sandflats b. Spawning/Nursery Habitat c. Submerged Aquatic Vegetation d. Fisheries Feeding/Migration Habitat e. Benthic Habitat (i.e. unique, hard bottom, mussel, complex habitats)	Distance, current direction Distance, current direction Distance, current direction specific species info Presence-Absence – descriptive categories of habitats to avoid (unique features)	2 2 H M L 0 H, M, L, 0 H, M, L, 0 H, M, L U H M L 0	Yes (21) Yes (21) Yes (21) Yes (21) Yes (20) No (1)	Yes (18) Yes (18) Yes (17) No (1) Yes (16) No (2) Yes (15) No (3)	.25 mi; 0.1 (6) vary w/ species/current <2000' .5 mi; 0.1 (6) .1 (3) .5 mi; 0.1 (6) .25 mi; 0.1 (6) .25 mi; 0.1 (6) Benthic animal ability to adapt at site

EVALUATION APPROACH FOR OPEN WATER SITES (#1)
Working Draft - April 2000

Evaluation Factor	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
6. Commercial and Recreational Fisheries (a)	Distance, current direction, amount, type, value	(H) M L, 0	Yes (21)	Yes (20)	.25 mi .5 (2)
a. Commercial Fisheries Harvest Areas		H, (M) L, 0	Yes (21)	Yes (20)	.1 mi (3) (b c)
b. Shellfish Propagation and Harvest Areas (b)	Distance, current direction, amount, type, value	H, (M) L, 0	Yes (21)	Yes (20)	(a) avoid dragging to listed bottom/am
c. Aquaculture Sites (c)	Distance, current direction, amount, type, value	H, (M) L, 0	Yes (20) No (1)	Yes (20)	(a,b c) - potential restored not just depleted fishery
d. Recreational Fisheries Areas (d)	Distance, current direction, amount, type, value				mile/km
7. Site Characteristics					
a. Physical Area (a)	Size of site (square footage)	Minimum size a	Yes (18) No (2)	Yes (18) No (2)	acres
b. Site Capacity (b)	Capacity of site (cubic yards)	Minimum capacity b	Yes (19) No (2)	Yes (18) No (2)	
c. Current Patterns, Water Circulation (c)	Ranges of near-bottom current velocity, potential for change	U, (H) M, (L) 0 c	Yes (20) No (1)	Yes (16) No (1)	0; fertisec - wave will resusp sed; - ambien above ave.
d. Exposure to Storm Events (d)	Wave climate	d	Yes (8) No (9)	Yes (9) No (2)	0; above ave wave actio in shall - wave height
e. Ambient Sediment Conditions/Type (e)	Categories: depositional, reworking, erosive	U, (H) M, L, (0) e	Yes (19) No (2)	Yes (17) No (2)	0; grain size
f. Bathymetry (f)	Depth	(H) M, (L) 0 (U) f	Yes (20) No (1)	Yes (17) No (3)	0; erosive; ft/mt/fathoms
8. Site Accessibility					
a. Route	Transportation conflicts	(H) (M) L, 0 (U)	Yes (16) No (2)	Yes (15) No (2)	
b. Location	Distance from site	(H) (M) L, 0	Yes (17) * No (1)	Yes (17)	
c. Logistics	Utilities, etc.	H (M) L, 0	Yes (17) ** No (1)	Yes (12) No (1)	
9. Site Use Conflicts					
a. Military Practice, Research or Restricted Areas	All categories assess a	U (H) (M) (L) 0 a	Yes (19) No (1)	Yes (17) No (1)	.5 mi
b. Extractable Resource Present	• Presence – Absence b	H (M) L, 0 b	Yes (9) No (11)	Yes (8)	.5 mi
c. Utilities (Submarine Pipelines and Cables)	• Distance from site c	H (M) (L) 0 c	Yes (19) No (1)	Yes (17)	.25 mi (2 200')
d. Public Beaches and Parklands	• Aesthetics d	H (M) (L) 0 (U) d	Yes (18) No (2)	Yes (16) No (1)	.5 mi - conflict w NW (2 mi)
e. Other Commercial Uses	• Timing of disposal e	H (M) (L) 0 e	Yes (19) No (1)	Yes (17)	.25 mi
f. Recreational Uses	• Zoning f	H (M) (L) 0 f	Yes (18) No (1)	Yes (17)	.25 mi
10. Duration of Potential Adverse Impacts	Length of Time – short term during use and long term following closure	(H) (M) L, 0 (U)	Yes (21)	Yes (16) No (3)	No long term impacts Define short/long term
11. Economics	$/cubic yard including opportunity costs	M ⇒ (H)	Yes (19) No (1)	Yes (16) No (3)	based on feasibility

U = Unacceptable H = High Impact
M = Moderate Impact L = Low Impact
0 = No Impact

add
- cumulative impact of repeated disposal
- pots for unsuitable space
- Distance in coast
- feasibility of site monitoring management

Yes, consider nature of impacts

Secondary concern

consider economic impact to community near dredging

EVALUATION APPROACH FOR NEARSHORE-BENEFICIAL USE SITES (#2)
Working Draft – April 2000

Evaluation Factor	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
II. Beneficial Use					
1. Threatened and Endangered Species a. Federally Listed Threatened or Endangered Species b. States Listed Rare/Endangered Species or those of State Concern	For both categories assess • Presence – Absence • Relevant species description, range, and migratory patterns • Distance from site	U, (H)², M, L, 0 2 2	yes (20) yes (18) yes (19)	yes (16) No (2) yes (16) No (2) yes (16) No (2)	yard/meter .5 (2) .2(6) 100' Species ☆ .25 mi;
2. Cultural/Archaeological Resource Sites or Historic Districts	Presence - Absence, distance from site, expected degree of disturbance	(H) (M) L, 0	yes (17) No (1)	yes (16) No (2)	.25; .2 (4) .3 mi
3. Designated Conservation Areas a. Federally designated Marine Sanctuaries, Wildlife Refuges, National Seashores & Parks b. State designated Marine Sanctuaries & Preserves or Fish Havens	For both categories assess • Presence – Absence • Distance and downcurrent effect • Relevant species description and range	(U) (H) (M) L, 0	yes (19) yes (18) yes (18)	yes (16) No (2) yes (16) No (2) yes (16) No (2)	1 mi; .2 (5) .3 .5 neg in state
4. Navigation Considerations a. Marine Shipping/Transit Lanes b. Anchorage Areas & Harbors of Refuge c. Aids to Navigation d. Recreational Navigation	Draft + propwash + buffer = minimum depth (a) Presence – Absence (b) Presence – Absence (assume safe radius) (c) Draft + propwash + buffer = minimum depth (d)	Minimum depth feet U, 0 U, 0 Minimum depth feet	yes (20) yes (19) yes (19) No (1) yes (20)	yes (18) yes (16) No (1) yes (16) No (1) yes (17) No (1)	.28 CG reqs (2) 1 mi .2 (5) .5 0 1 .1 mi .2 (5) .5 0 .1 mi .2 (5) .4 8' .1 mi .2 (5)

.5 mi (2) .0 ↓ 25'

Factors 4a, d; 6a, c; 7 c, e, f = irrelevant to Nearshore
evaluate remaining as with open water.

Beneficial use is related more to normal material proposed for dredging
- especially high sand.

EVALUATION APPROACH FOR NEARSHORE-BENEFICIAL USE SITES (#2)
Working Draft – April 2000

Evaluation Factor	Scoring Technique	Metric		Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
5. Existing Habitat Types						
a. Mudflats and Sandflats	Distance to site, area, current dir.	(H) M L, 0	a	yes(20)	yes(17) No(1)	.25 mi; .1 (6) ; 0
b. Spawning/Nursery Habitat	Distance to site, area, current dir.	(H) M L, 0	b		yes(17) No(1)	.5 mi; .1(6)
c. Submerged Aquatic Vegetation	Distance to site, area, current dir.	(H) M L, 0	c		yes(17) No(1)	.5 mi; .1(6) .25 mi
d. Fisheries Feeding/Migration Habitat	specific species info	(H) M L	d		yes(16) No(2)	.25 mi; .1(6) .5
e. Benthic Habitat (i.e. unique, hard bottom, mussel, complex habitats)	Presence – Absence – descriptive categories of habitats to avoid (unique features)	U, (H) M (L) 0	e		yes (16) No(2)	.25 mi; .1 (6)
f. Wetlands	Amount, type	H, (M) L, 0	f		yes (14) No(2)	.25 mi; .1 (6) .5
6. Commercial and Recreational Fisheries						
a. Commercial Fisheries Harvest Areas	Distance, current direction, amount, type, value	(H) M L, 0	a	yes(20)	yes(17) No(1)	.25 mi .1 (6) .5 .01 mi
b. Shellfish Propagation and Harvest Areas	Distance, current direction, amount, type, value	(H) M L, 0	b			
c. Aquaculture Sites	Distance, current direction, amount, type, value	(H) M L, 0	c			
d. Recreational Fisheries Areas	Distance, current direction, amount, type, value	(H) M L, 0	d	yes(19) No(1)		
7. Site Characteristics						
a. Physical Area	Size of site (square footage)	Minimum size	a	Yes(19) No(1)	yes(17) No (1)	area (H) M .1 (3)
b. Site Capacity	Capacity of site (cubic yards)	Minimum capacity	b	yes (19) No(1)	yes(17) No (1)	
c. Current Patterns, Water Circulation	Ranges of near-bottom current velocity, potential for change	U, H, M, L, 0	c	yes (20)	yes(16) No(2)	0 cu/yd
	Wave climate					
d. Exposure to Storm Events, boat wakes	Categories: depositional, reworking, erosive	U, H, M, L, 0	d	yes(14) No(6)	yes(9) No(2)	0
e. Ambient Sediment Conditions/Type		H, M, L, 0	e	yes(19) No(1)	yes(16) No(2)	0
f. Bathymetry	Depth	H, M, L, 0	f	yes(19) No(1)	yes(14) No(2)	0
8. Site Accessibility						(H) (M)
a. Route	Transportation conflicts	(H), M, L, 0	a	yes(18) No(1)	yes(14) No(2)	
b. Location	Distance from site	(H), M, L, 0	b		yes(18)	
c. Logistics	Utilities, etc.	(H), M, L, 0	c		yes(17) No(1)	
9. Engineering Considerations	Geotechnical stability, foundation requirements			yes(18)	yes(16) No(1)	(H)

10,000 ft2 / 1000 cy
LH
NA
H
NA

EVALUATION APPROACH FOR NEARSHORE-BENEFICIAL USE SITES (#2)
Working Draft – April 2000

Evaluation Factor	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
10. Site Use Conflicts a. Military Practice, Research or Restricted Areas b. Extractable Resource Present c. Utilities (Submarine Pipelines and Cables) d. Public Beaches and Parklands e. Other Commercial Uses f. Recreational Uses	All categories assess • Presence – Absence • Distance from site • Aesthetics • Timing of disposal • Zoning	U, H, M, L, 0 a H, M, L, 0 b H, M, L, 0 c H, M, L, 0 d H, M, L, 0 e H, M, L, 0 f	yes (19) No (1) yes (14) No (1) yes (19) No (1) yes (18) No (2) yes (19) No (1) yes (19) No (1)	yes (16) No (2) yes (17) No (1) yes (18) No (1) yes (15) No (1) yes (16) No (1) yes (16) No (1)	.5 mi mile/km .5 mi " .25 mi yard/meter .50 mi ; conflicts w/ Navigation yard .25 mi yard/meter .25 mi yard meter
11. Beneficial Uses	Potential for marine habitat or port facilities – amount, type, value	H	yes (18)	yes (12) No (10)	
12. Duration of Potential Adverse Impacts	Length of Time – short term during use and long term following closure	H, M, L, 0	yes (18) No (1)	yes (16) No (2)	*
13. Economics	$/cubic yard including opportunity costs	L	yes (10) No (1)	yes (15) No (2)	Plus consider economic impacts (2)

U = Unacceptable H = High Impact
M = Moderate Impact L = Low Impact
0 = No Impact

* Define short/long term

Feasibility/job

EVALUATION APPROACH FOR UPLAND SITES (#3)
Working Draft – April 2000

Evaluation Factors	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
III. Upland Sites					
1. Threatened and Endangered Species a. Federally Listed Threatened or Endangered Species b. States Listed Rare/Endangered Species or those of State Concern	Presence-Absence Distance/Migratory patterns Species description/range	(2) U, (H) (M) L, O a b	a yes (20) b yes (20)	a yes (17) No (2) b yes (17) No (2)	.25; 3 mi (4) .5 mi (3) 3 mi; (3)
2. Cultural/Archaeological Resource Sites or Historic Districts	Presence - Absence Proximity Degree of Disturbance	H, (M) (L) O	yes (19) No (1)	yes (16) No (2)	.25; 3 mi (7)
3. Conservation Areas, Open Space Land, Recreational Areas & Natural Reserves a. Federal Wildlife Refuges b. State-designated Reserves c. Public and Non-Profit Areas d. Private Areas and Heavily Wooded Areas	Presence - Absence Proximity, Distance	3 (H) (M) 2 L, O (M) a (L) b (M) c d	a yes (20) b yes (20) c yes (20) d yes (20)	a yes (18) No (2) b yes (18) No (2) c yes (15) No (1) d yes (15) No (1)	yes/~~mo~~ .25 mi; .5 mi 3 mi (10)
4. Existing Habitat(s) at Site a. Successional Stage b. Degree of Disturbance c. Landscape Position d. Wildlife Function or Use	Presence-Absence of T&E Species Degree of Diversity Uniqueness Regional Corridors/Range of Species	3 (U) (H) (M) L, O a b c d	a yes (20) b yes (20) c yes (19) No (1) d yes (20)	a yes (17) No (3) b c d	.25 mi; 3 (10) .5 mi (2)
5. Groundwater Quality a. Sole Source Aquifer b. Wellhead Protection Zones	Presence/absence Type of Zone	(U) O H, M, L, 0	a yes (20) b yes (9) No (1)	a yes (18) No (1) b yes (18) No (1)	.5 mi 3 mi (10)
6. Surface Water Quality a. Relation to Water Supply Watersheds b. Rivers	Location/proximity/distance relative to WS groundwater WQ classification Anadromous/catadromous fishery	(U) O (3) (H) (M) L, 0	a yes (20) b yes (20)	a yes (19) No (1) b yes (19) No (1)	3 mi (10)

per Lou wetlands Bonnie regs

EVALUATION APPROACH FOR UPLAND SITES (#3)
Working Draft – April 2000

Evaluation Factors	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
7. Site Characteristics a. Physical Area of Impact b. Site Capacity c. Site Protection Requirements d. Existing Terrain e. Subsurface/ Substrate f. Floodplains g. Wetlands	Size/area/depth a Volume of material Fencing, other security b Slopes, soils c Geology d Presence by type e Presence by type f Acreage g	Min. acreage, depth (ft) # CY Potential Degree/type Stability/compaction Zone - U, (H) M, (L) 0 Acreage - U, (H) M, (L) 0	Yes(19) No(1) Yes(19) No(1) Yes(20) Yes(20) Yes(20) Yes(20) Yes(20)	Yes(17) No(2) Yes(17) No(2) Yes(18) No(2) Yes(17) No(2) Yes(17) No(2) Yes(17) No(2) Yes(17) No(1)	3mi (7) (H)² .25 1000 cy (H) - presence in close prox. - no wetland fill; .5 acres (L)
8. Engineering Considerations a. Utility Crossings b. Dewatering & Rehandling Area Availability & Adequacy	Number/type Acreage/proximity Down gradient receptors	H, (M) L, 0 (2)	Yes(20) Yes(20)	Yes(17) No(2) Yes(17) No(2)	3.0 mi (3) Depth ↓
9. Site Use Conflicts a. Military Practice, Research or Restricted Areas b. Public Parklands and other Recreational Uses c. Commercial Uses d. Residential Uses e. Agricultural soils	Presence - absence Distance Views/scenic quality; Active/Passive; Timing/Duration Odors, Dust, Aesthetics, Noise Prime or unique farmland Presence, acreage, uniqueness	U (0) H, (M) (L) 0	Yes(19) No(1) ↓ ↓	Yes(17) No(2) ↓ ↓	0 3 mi (10) on U.S. Gov't (H) (M) ↓ ↓ ↓ ↓
10. Present and Projected Land Use, Including Adjacent Areas	Zoning, master plans Compliance, conformance Incompatibility Sensitive receptors #, type, proximity	U (0) (M) H, (M) (L) 0	Yes(19) No(1) ↓ ↓	Yes(17) No(1) Yes(16) No(2) Yes(16) No(2)	3mi (2) ↓
11. Site Accessibility a. Route b. Location c. Logistics	# crossings/clearances Distance from source/disposal site Timing, rehandling limitations/conflicts	# Miles H, M, L	Yes(20)	Yes(17) No(2) Yes(18) No(1) Yes(18) No(1)	3 mi (9) ↓
12. Availability for Use a. Land Acquisition b. Potential Extractable Resources	# of parcels/owners Cost Value/Opportunity Costs	# $ Other uses/$	Yes(19) No(1)	Yes(18) No(3) Yes(17) No(2)	3.0 (6) ↓

Feasibility

EVALUATION APPROACH FOR UPLAND SITES (#3)
Working Draft – April 2000

Evaluation Factors	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
10. Socioeconomic/Environmental Justice a. Population b. Demographic groups c. Income	# within a distance % minorities, disadvantaged % low/mod income	5 2 (H) (M) L. (0)	yes(17) No(3) yes (16) No(4) yes (12) No(8)	yes(15) No(2) yes (5) No (13) yes(5) No (12)	3 mile (6)
11. Duration of Impacts	Short-term Long-term Permanent, Irretrievable	L (M) H/U	yes (19) No (1)	yes(18) No (1)	3.0 (3) *
12. Economics	Opportunity costs Implementation/management costs	Value of lost use (H) $/acre and $/ cy (H)	yes (19) No(1)	yes (16) No (3)	include $/cy transp. cost

U = Unacceptable
M = Moderate Impact
0 = No Impact
H = High Impact
L= Low Impact

* Define Short Term + long

also economic impact to community

EVALUATION APPROACH FOR TREATMENT TECHNOLOGIES (#4)
Working Draft - April 2000

Evaluation Factors	Scoring Technique	Metric	Appropriate Factor? (Yes/No)	Appropriate Scoring Technique? (Yes/No)	What Metric Value Screens Out a Site? (e.g., yds, acres)
IV. Treatment Technologies					
1. Site Accessibility a. Route b. Location c. Logistics	# crossings/vertical clearance a Sensitive receptors along route, near site b Proximity to source of material c Handling, equipment needs and impacts	Cost and time #'s/types Distance Degree of complexity	Yes(19) No(1) Yes(20) Yes(20)	Yes(17) No(2) Yes(17) No(2) Yes(18) No(1) Yes(18) No(1)	H .2 (5) .02 all w/ .25 mi 5 lanes M H H
2. Site Characteristics and Land Use Conflicts a. Material Transfer Mechanism b. Conflicts with Surrounding Land Use	Distance from Water Access Distances/types of abutting uses	Miles H, M, L	Yes(19) No(1)	Yes(17) No(2)	H .2 mi (5) .02 mi (H) (H) H
3. Site Availability & Acquisition	Capacity Complexity of acquisition Cost	Min. acreage # Parcels/Zoning $ - H, M, L	Yes(18) No(1)	Yes(16) No(2) Yes(17) No(1) Yes(17) No(1)	– (H) (H) 3 mi M H
4. Impacts and Effectiveness a. Airborne Discharge of Contaminants b. Noise of Operations c. Stability of Product d. Reduction in Contaminant Availability	Type, emissions, distance from sensitive receptors Decibels, distance, duration, intensity Contaminant isolation Contaminant elimination	U, H, (M)[2], L, 0 Yes/No/degree Yes/No/degree	Yes(19)	Yes(18) No(1) Yes(18) Yes(17) No(1)	5 (4) (H)[2] (M) 3 mi 5 (4) Degree
5. Feasibility/Practicability a. Dewatering Requirements b. Dewatering Effluent c. Proven Technology d. Commercial Application e. Ability to Treat Large Volumes f. Cost of Implementation	Scope of facility needed Contaminant discharge impacts Certainty of effectiveness Private sector interest in operation Rate of Treatment e Cost/volume f	Size a H, (M), L b H, (M) L c (Yes)/no d Timing/volume of material e $ - (H) M, L f	Yes(19) No(1) Yes(19) Yes(19) Yes(19) Yes(19) No(1) Yes(19)	Yes(16) No(2) Yes(17) No(1)	25 acres H, M M, L 25,000 cy/d $ (H) (M)

U = Unacceptable H = High Impact
M = Moderate impact L = Low Impact
0 = No Impact

Too narrow a matrix to use; see Carey's paper - project seekers not objective

LONG ISLAND SOUND EIS

Economic Surveys, Analysis, and Impacts

1. Identification of Navigation Dependent Facilities

All facilities in the Long Island Sound EIS Study Area that are dependent on dredging for continued future use will be identified. These will include: deep-draft shipping terminals, marine transportation facilities, marinas and yacht clubs, boat repair and construction facilities, commercial fishing facilities, and government facilities including US Coast Guard, US Navy, port authorities, and municipal wharves and mooring areas.

2. Survey of Facilities

A 100% survey of facilities identified as dredging-dependent will be conducted. The survey will be designed to determine the following: expected future dredging quantities, frequency of future dredging, past disposal locations used, sensitivity of future dredging to disposal costs, and the degree to which the business/operation is dependent on dredging. The survey will be conducted using mail questionnaires. However, for those facilities that are likely to represent a large portion of the future dredging quantities, such as deep-draft terminals, large marine industries, and large marinas, and for facilities that are judged to be particularly important or sensitive to the analysis, telephone or in-person interviews will be conducted. The harbormaster in each city and town will be personally contacted.

3. Determination of Dredging Needs and Future Quantities

Data collected for the surveys will be combined with dredging permit data from the Corps/EPA and Corps projections for the dredging of Federal navigation projects. The total projections for future dredging will be made by logical sub-areas within the overall EIS study area in order to facilitate analysis of alternative disposal site locations.

4. Estimate Economic Significance of Navigation Dependent Industries

Economic data will be collected in order to estimate the economic significance of navigation dependent industries to the regional economies. Different categories will be analyzed separately, such as deep-draft, recreational boating, and commercial fishing, and their importance to the regional economies will be identified and measured. A Multiplier Analysis will be performed in order to determine the total economic impact of navigation dependent activities on the regions. The analysis will

employ a generally accepted input-output model to capture direct, indirect, and induced economic effects. The results of this analysis will be presented in logical geographical sub-areas in order to facilitate analysis of disposal alternatives. The total economic impact of the no-dredging alternative will be clearly stated.

5. **Analysis of Social and Economic Impacts of Disposal Alternatives**

An economic model will be developed which will determine the likely impacts to navigation dependent industries that would be caused by changes in disposal costs. The economic impact of each disposal alternative will be determined through use of this model. The no-dredging alternative will also be thoroughly analyzed. In addition to economic impacts, social, cultural, and quality of life impacts will be identified, quantified where possible, or discussed qualitatively.

6. **Analysis of Socioeconomic Impacts of Disposal Activities at Alternative Disposal Sites**

Impacts will be identified and analyzed for the alternative disposal sites. Impacted areas could include: commercial fishing revenues, property values near sites, impacts to recreational beaches, impacts to recreational boating, impacts to recreational fishing, natural resources impacts, traffic, noise, etc.

7. **Economic Appendix for the Draft EIS**

An economic appendix will be prepared for the EIS, which will include the results of the surveys and analyses undertaken in Sections 1 through 6 above.

8. **Socioeconomic Portions of the Draft EIS**

All work performed for inclusion into the Economics Appendix will be included in the appropriate sections of the Draft EIS.

ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE DESIGNATION OF DREDGED MATERIAL DISPOSAL SITES IN THE LONG ISLAND SOUND REGION

ENVIRONMENTAL APPROACH

Site screening of alternatives:
Site screening will be performed to identify and select disposal site alternatives that will be evaluated in the EIS. To the extent possible, existing data will be used in a Geographic Information System (GIS) to map environmental conditions and resources to enable EPA and the Corps to pick appropriate sites. Such sites would have features that would be desirable as a future disposal site. For example, a containment open water site, desirable features would include low current speeds, muddy bottom, a deep bathymetric feature, low fisheries productivity and little or no endangered species presence or use. The purpose of site screening would be to identify areas in the Sound that have as many of these features/conditions as possible. The use of GIS allows comparative mapping of these features throughout the Sound (if the data exists) so that sites maximizing these features can be identified. Mapping of each feature would be done in separate layers. When each mapped layer is overlain on a base map of the Sound areas with desirable and undesirable features become evident, enabling EPA and the Corps to more easily identify potential disposal sites.

Once candidate alternative sites are identified, the compiled environmental data would be applied to appropriate site evaluation criteria to perform a cursory ranking of the candidate sites. For example, sites with lower fisheries productivity would rank higher than sites with higher catches. Likewise, sites with lower current speeds would rank higher than sites with higher current speeds. EPA and the Corps intend to categorize the more desirable sites as sites suitable for further evaluation in the EIS.

Detailed Assessment of Environmental Impacts:

A. Open Water Sites:
Each open water site will be evaluated in detail for the following environmental issues: physical oceanography, water quality, plankton, sediment texture and chemistry, benthic community, sediment toxicity, bioaccumulation (in benthic invertebrates, fish and lobsters, fisheries resources), marine wildlife and human uses (e.g., commercial, recreational, health effects from fish consumption, etc.).

- Physical oceanography:

Physical oceanographic data such as current speeds, direction and wave data will be identified or collected that is representative for each disposal site evaluated in the EIS. This data would be used to hindcast and forecast the potential of resuspension and transport of dredged material as a result of high frequency storms such as northeasters and low frequency storms such as hurricanes. EPA and the Corps will perform state of the art erosional modeling to assess the long term stability of mounds. Time series data on bathymetry current data at the existing sites will be reviewed to assess stability

at the existing sites. These data will be compared to those of alternative sites.

- Water Quality:

Existing data on suspended solids, dissolved oxygen, nutrients and toxic contaminants will be reviewed to assess the general water quality of the Sound. A range of example sediments would be modeled to assess relative available dilution available for each site. Impacts of disposal on dissolved oxygen would be assessed relative to hypoxic events in the western Sound.

- Plankton:

Existing data on plankton would be used to assess the general impacts of dredged material disposal on this community. Past toxicity testing and applicable scientific literature would be reviewed to project impacts.

- Sediment Environment:

Sediment texture (grain size), chemistry, toxicity and benthic community data (existing and collected under this EIS) would be reviewed to assess the impacts of disposal at the existing sites. The sample design allows assessment of historical (pre-1979--before modern monitoring and testing tools were used routinely) disposal; and post-1979 disposal. Evidence of offsite sediment transport and impacts will also be evaluated. A sediment triad approach was chosen which focuses on sediment chemistry, sediment toxicity and benthic macroinvertebrate community. These impacts at the four existing sites cover a range of conditions present in the Sound. This, combined with similar data at alternative sites would be used to project impacts at these alternative sites.

- Bioaccumulation:

Bioaccumulation data on a wide range of contaminants (metals, PAHs, PCBs, dioxins, pesticides, TBT and radionuclides) is being collected on benthic invertebrates, fish and lobsters at or in the vicinity of each of the four existing disposal sites. The benthic invertebrate will be the most useful since these animals are relatable to the sediment chemistry found at each sampling station. This will provide an indication of bioavailability of sediments contaminants at each disposal site. Data on fish and lobster provides a limited assessment on whether the sediment contaminants are mobilized in the lower food web (fish and lobsters feed on these sediment invertebrates). Since fish and lobster are free to move on and off sites on a seasonal and daily basis, such data does not provide cause-effect assessments at these higher trophic levels. However, EPA and the Corps recognize the value in looking for evidence of exposure in these predatory forms that also serve as food for marine wildlife and humans. Data will be compared to reference values taken from the sampling or the literature to assess the potential for adverse effects. Risk modeling would be performed to assess the effects on human consumers.

- Fisheries Resources:

Impacts to fisheries resources, including lobster and shellfish, would be evaluated for each disposal site chosen for detailed evaluation. Long term catch data collected by the Connecticut Department of Environmental Protection and the National Marine Fisheries Service would be used to characterize the species diversity, age structure, seasonality and productivity of each disposal area. Impacts to fisheries would be projected from data at the four existing sites in comparison to similar unaffected reference areas. In addition, the effects of disposal due to the bottom disturbance and any changes in bottom type will be assess for each important species relative to their habitat requirements for each affected life stage. The effects on organism health would be evaluated with bioaccumulation data in concert with scientific literature. An assessment on Essential Fish Habitat (EFH) of the listed species will be performed in consultation with the appropriate federal and State fisheries agencies.

- Marine Wildlife/Endangered Species:

The presence or potential presence of marine wildlife (seabirds, sea turtles, marine mammals) or any federal/state listed protected species at each disposal site area would be determined in consultation with federal/state fish and wildlife agencies. The life histories of these species will be reviewed, and combined with information from the agencies and available scientific studies, to determine presence/absences in the disposal site study area and to assess potential for adverse effects. Potential exposure to sediment contaminants via the preferred prey will be assessed.

- Human Uses (local amenities such as beaches)

The location of amenity areas relative to each disposal site will be evaluated considering the direction of the predominant currents and pathways of exposure. The effects of disposal activities on beaches, swimming and other recreational and commercial uses of the Sound will be assessed for each disposal site and alternative sites. States will be consulted for the appropriate data and the latter issues.

B. Upland/Beneficial-Use sites:

The EIS will perform both a generic and a limited site-specific assessment both upland and beneficial use alternatives in a similar manner. The purpose of the EIS is programmatic in nature and not project-specific. The Corps cannot implement upland and beneficial-use alternatives without a specific dredging project or authority. Evaluation of specific projects and implementation are beyond the scope of this EIS. However, these assessments provide a list of sites that might be available when future projects are proposed and assessed. The EIS will acknowledge that the implementability and actual impacts for both these alternatives would best be evaluated when a dredging project is proposed. The purpose of the detailed site evaluation is to provide an assessment of alternatives to open water disposal, to the extent possible, that would be available for future projects. Specific projects would use this assessment

as a starting point to develop a more comprehensive project-specific assessment of alternatives required for those projects under the National Environmental Policy Act (NEPA). It must be understood that any upland or beneficial-use sites identified at the time of this EIS are subject to change in terms of future land use, ownership, availability, regulatory requirements and environmental impact. Future alternatives including treatment technologies would be assessed when a particular dredging project is proposed. Thus, these assessments of alternatives are necessarily generic in nature.

Each Corps dredging project will be subject to the NEPA review process (EIS or Environmental Assessment) while non-Corps aquatic disposal projects require Federal and State permits in addition to a NEPA review. The three States' (CT, NY RI) solid waste program regulate upland disposal which is outside Corps jurisdiction, unless there is drainage back to a surface water which is also regulated by the Corps. During those review processes, sediments are analyzed for their site-specific regulatory compliance and engineering compatibility/feasibility with the disposal site requirements (depending upon the volume and quality (grain size, contamination level, salinity) of the project sediments) and the degree of potential impact of disposal. These are difficult to predict without a specific project. However, for the purposes of this document certain generic assumptions of example project sediments can be made to assess and compare impacts of these alternatives. For both alternatives, the States of Connecticut and New York will provide a list of candidate sites, resource information and regulatory requirements for these assessments. The ongoing Providence River EIS has already provided similar data for Rhode Island.

Identification of candidate sites:
Candidate upland sites for potential site screening analysis will include existing landfills, brownfields and disturbed areas in coastal urban settings that are reasonably proximate dredging centers and can accommodate some sort of "confined disposal facility."

Beneficial-use sites consist of public beaches in need of nourishment and a variety of habitat development/improvement/restoration projects, including saltmarsh restoration/creation, island creation/expansion. A starting point would be any of the beneficial-use sites that were identified by the CZM offices of CT and NY for the LIS National Estuary Program that require sediments. Other types of development projects could include park creation/expansion, offshore reef structures, or port development.

Site Screening:
Site screening will take place in two initial steps. Phase I involves the screening of candidate alternatives to determine whether there exists an exclusion criteria that would prevent an alternative from being implemented. Reasons for exclusion may involve (but not limited to) issues related to land use, accessability and capacity. Next in Phase II, the sites that pass the initial screening process (no fatal flaws) will be assessed based

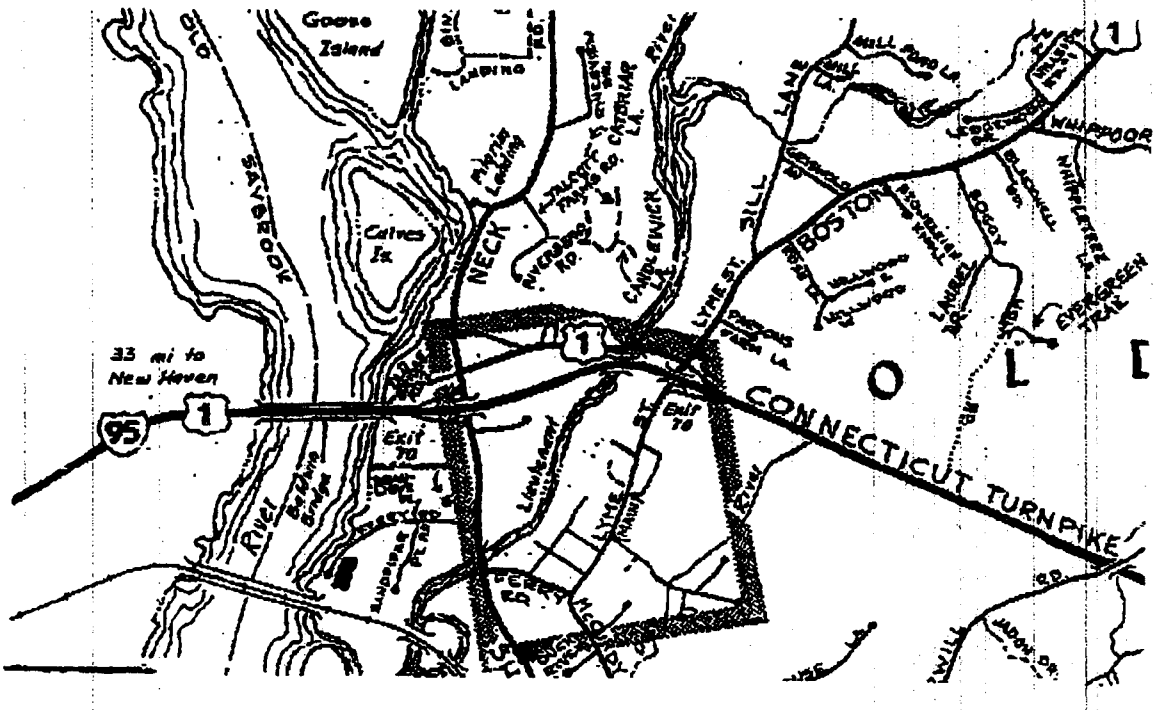
on a subset of the site evaluation criteria focusing on engineering feasibility, socioeconomic and environmental issues, addressing as many of the issues as is critical and reasonable with the data at hand. The sites will be categorized in the following groups based on the degree of potential impact, implementability and feasibility of each site:

- Sites for which a detailed evaluation will be completed in the EIS;
- Sites eliminated from further evaluation, but could be reconsidered if additional significant information warrants; and
- Sites that are eliminated from further evaluation due to a fatal flaw not previously identified.

Impact analysis:

The generic assessment will include a general Sound-wide description of the environmental features and resources of the upland areas that encompass the study area. Only those sites evaluated in the EIS in detail should be described on site-specific basis. The environmental impacts will be generically described for each type of disposal alternative evaluated in the EIS. The assessment will include examples of studies performed by the Corps of Engineers or other Federal/State agencies from the scientific literature or agency reports. More detailed site-specific evaluations can be made with the short-listed final candidate sites that remain after site screening addressing issues listed in the site evaluation criteria, such as soils, vegetation, water resources (surface and ground), upland or aquatic wildlife resources and protected species. For the detailed site analysis, regional assumptions can be made relative to the quantity and type of dredged material (from the needs survey) that would be used for a given alternative and its availability in the region of the Sound.

Department of Environmental Protection
MARINE HEADQUARTERS
333 Ferry Road
Old Lyme, Connecticut 06371-0280



Directions: **I-95 South to Exit 70.** At the end of the exit ramp (stop light) go straight onto Hall's Road. After second stop light, go left onto RT 156, under the turnpike and 1/4 mile to Ferry Road on the right. Marine Headquarters is at the end of Ferry Road.

Directions: **I-95 North to Exit 70.** At the end of the exit ramp, turn right onto RT 156. Go 1/4 mile to Ferry Road on the right. Marine Headquarters is at the end of Ferry Road.

APPENDIX B

AGENDA

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US Army Corps
Of Engineers
New England District

United States
Environmental
Protection Agency
Region I

LONG ISLAND SOUND
DREDGED MATERIAL DISPOSAL EIS WORKSHOP
10:00 a.m. – 4:00 p.m.
July 19, 2000 – Old Lyme, CT

AGENDA

10:00 a.m.	Welcome & Introductions, Overview of Ballots & Working Group Make-up - Ann Rodney, US Environmental Protection Agency
10:30 a.m.	Economics Presentation - Ed O'Leary, US Army Corps of Engineers
11:00 a.m.	Discussion
12:00 noon	Lunch
1:00 p.m.	Environmental Presentation Overview - Dave Tomey, US Environmental Protection Agency Fish - Dr. Drew Carey, Coastal Vision Benthic Resources and Lobster - Dr. Dave Mitchell, ENSR
2:00	Discussion
3:00	Wrap-up

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APPENDIX C

PRESENTATION INFORMATION

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ED O'LEARY, USACE

Long Island Sound EIS

Economic Surveys, Analysis, and Impacts

Ed O'Leary
USACE, New England District

Tasks

- Identify Universe of Navigation Dependent Facilities
- Survey Facilities
- Determine Dredging Needs and Project Future Dredging Quantities
- Estimate Economic Significance of Navigation Dependent Facilities
- Conduct Analysis of Social and Economic Impacts of Disposal Alternatives

Tasks

- Conduct Analysis of Socioeconomic Impacts of Disposal Activities
- Prepare Economic Appendix
- Prepare Socioeconomic Portions of DEIS

Identification of Navigation Dependent Facilities

- Deep Draft Shipping Terminals
- Marine Transportation Facilities
- Marinas and Yacht Clubs
- Boat Repair & Construction Facilities
- Commercial Fishing Facilities
- Government Facilities

Survey of Facilities

- 100 % Coverage
- Future Dredging Quantities, Dredging Frequency, Past Disposal Locations, Sensitivity of Dredging Decisions to Disposal Cost, Dependency on Dredging
- Mail Questionnaires
- Telephone/In-person Interviews for Large Facilities

Determination of Dredging Needs and Future Quantities

- Questionnaires
- Dredging Permit Data
- CE Estimate of Future Dredging at Federal Navigation Projects

Estimate Economic Significance of Navigation Dependent Industries

- Identification and Measurement of Impacts on Regional Economies by Sector
- Multiplier Analysis to Measure Direct, Indirect and Induced Effects On Sales, Income, Employment and Tax Revenues
- Impacts Displayed by Geographic Areas

Conduct Analysis of Economic Impacts of Dredging Alternatives

- Economic Model to Estimate Impacts of Changes in Disposal Cost on Navigation Dependent Activities
- Deep Draft Impacts-Increased transportation cost, potential for collisions and oil spills
- Commercial Impacts-fish harvesting cost
- Recreational Impacts

Conduct Analysis of Socioeconomic Impacts of Disposal

- Shoreline Property Values
- Commercial Fishing Revenues
- Recreational Boating
- Recreational Fishing
- Property Values, traffic and noise impacts for upland disposal sites

Prepare Economic Appendix and Socioeconomic Portions of DEIS

- Consolidate and Summarize Economic Appendix
- Describe Affected Environment
- Resources Affected include employment, income, recreational fleet, commercial fleet, deep draft fleet, property values
- Identify and Describe Impacts on Resources

DAVE TOMEY, USEPA

ENVIRONMENTAL IMPACT STATEMENT FOR THE DESIGNATION OF DREDGED MATERIAL DISPOSAL SITES IN THE LONG ISLAND SOUND REGION

ENVIRONMENTAL APPROACH

ALTERNATIVES

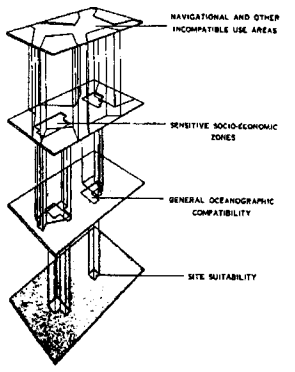
- OPEN WATER SITES
- UPLAND SITES
- BENEFICIAL USE SITES
- TREATMENT TECHNOLOGIES

OPEN WATER SITES

- SITE SCREENING AND IDENTIFICATION OF ALTERNATIVES
- EVALUATION OF EXISTING SITES
- COMPARISON OF IMPACTS

SITE SCREENING

- EXISTING DATA
- GEOGRAPHIC INFORMATION SYSTEMS
- MAP RESOURCES/SITE CONDITIONS
  (FISHERIES, CURRENT SPEED, *etc.)*
- OVERLAY MAPPED RESOURCES/SITE CONDITIONS TO IDENTIFY AREAS WITH DESIRABLE/UNDESIRABLE FEATURES



OPEN WATER ISSUES

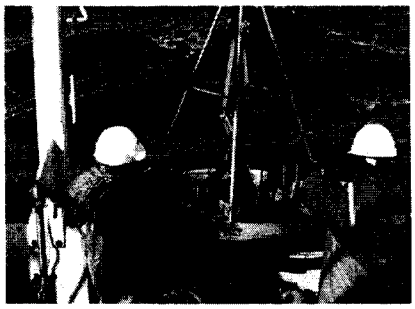
- PHYSICAL OCEANOGRAPHY
- WATER QUALITY AND ECOLOGY
- SEDIMENT ENVIRONMENT
- BIOACCUMULATION
- FISHERIES RESOURCES
- MARINE WILDLIFE
- HISTORICAL/ARCHAEOLOGICAL
- HUMAN USES
- POTENTIAL IMPACTS

PHYSICAL OCEANOGRAPHY

- IDENTIFY AND REVIEW CURRENT / WAVE DATA
- DETERMINE DATA NEEDS
- COLLECT DATA
- HINDCAST/ FORECAST BOTTOM VELOCITIES FROM STORM DATA
- EROSIONAL MODELING
- DAMOS DATA

WATER QUALITY AND ECOLOGY

- EXISTING DATA
  - SUSPENDED SOLIDS
  - DISSOLVED OXYGEN
  - NUTRIENTS
  - TOXICS
  - TOXICITY TESTS
  - PLANKTON
- WATER QUALITY/DILUTION MODELING
- DISSOLVED OXYGEN ASSESSMENT



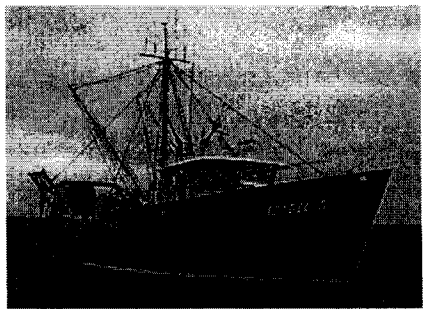
SEDIMENT ENVIRONMENT

- SEDIMENT TEXTURE, CHEMISTRY
- SEDIMENT TOXICITY
- BENTHIC COMMUNITY STRUCTURE
- SAMPLE DESIGN
  - HISTORIC
  - ACTIVE
  - NO IMPACT
  - OFFSITE

BIOACCUMULATION

METALS, PAHs, PCBs, DIOXINS, PESTICIDES RADIONUCLIDES, TBT

- BENTHIC INVERTEBRATES
  - HISTORIC
  - ACTIVE
  - NO IMPACT
- FISH (WINTER FLOUNDER, SCUP, STRIPED BASS)
- LOBSTER (MUSCLE AND TOMALLEY)



FISHERIES

FINFISH, LOBSTER, SHELLFISH RESOURCE ASSESSMENT

- LONG TERM CT DEP DATA SET (1984-2000) (SIMPSON *et al.* 2000)
- REANALYZE DATA TO PROVIDE SITE-SPECIFIC ASSESSMENT (DIVERSITY, AGE STRUCTURE, SEASONALITY, PRODUCTIVITY)
- SUPPLEMENTAL SAMPLING

FISHERIES

FISHING ACTIVITIES

- INTERVIEW COMMERCIAL AND RECREATIONAL FISHERPERSONS
- REVIEW VOLUNTEER ANGLER SURVEYS AND COMMERCIAL LOGBOOKS

MARINE WILDLIFE

EXISTING DATA

- SEABIRDS
- SEA TURTLES
- MARINE MAMMALS
- FEDERAL- AND STATE-LISTED PROTECTED SPECIES

HISTORICAL/ARCHAEOLOGICAL

- REVIEW OF EXISTING DATA (INCLUDING SIDE SCAN SONAR RECORDS)
- REVIEW OF LITERATURE/RECORDS
- COORDINATION WITH STATE/LOCAL EXPERTS

HUMAN USES

- BEACHES, PARKS
- RECREATIONAL ACTIVITES (FISHING, DIVING, BOATING, *etc.*)
- COMMERCIAL ACTIVITES (FISHING, SHIPPING, *etc.*)
- RESEARCH

UPLAND/BENEFICIAL USE SITES

- IDENTIFICATION OF CANDIDATE SITES
- SITE SCREENING
- IMPACT ASSESSMENT

IDENTIFICATION OF UPLAND CANDIDATE SITES

- EXISTING LANDFILLS
- BROWNFIELDS
- DISTURBED COASTAL AREAS NEAR DREDGING CENTERS

IDENTIFICATION OF BENEFICIAL USE CANDIDATE SITES

- BEACH NOURISHMENT
- HABITAT RESTORATION / DEVELOPMENT
  (SALTMARSH, EELGRASS BEDS, MUDFLATS)
- PARK/RECREATION EXPANSION
- PORT DEVELOPMENT

SCREENING OF UPLAND/BENEFICIAL USE CANDIDATE SITES

- IDENTIFY LIST OF POTENTIAL SITES
- PHASE I - EXCLUSIONARY CRITERIA
  FATAL FLAWS
- PHASE II - FINER SCALE SCREEN
  RANK BASED ON ENGINEERING, ECONOMIC AND ENVIRONMENTAL ISSUES
- SHORT LIST EVALUATED IN DETAIL IN EIS

EVALUATION OF UPLAND/BENEFICIAL USE CANDIDATE SITES

- GENERIC ASSESSMENT OF IMPACTS
- IMPACTS TO SOILS, VEGETATION, WATER RESOURCES, UPLAND AND AQUATIC WILDLIFE (INCLUDING PROTECTED SPECIES), HISTORICAL/ARCHAEOLOGICAL RESOURCES
- ASSUMPTIONS OF A RANGE OF SEDIMENT QUALITY
- RANKING OF SITES RELATIVE TO POTENTIAL IMPACT

EVALUATION OF TREATMENT TECHNOLOGIES

- REVIEW OF FEASIBILITY/PRACTICALITY OF CURRENT TECHNOLOGY
- SITE REQUIREMENTS/AVAILABILITY/ACCESSABILITY
- IMPACTS
  - DISCHARGE OF CONTAMINANTS
  - NOISE
  - STABILITY OF PRODUCT
  - REDUCTION IN CONTAMINANT AVAILABILITY
  - DISPOSAL IMPACTS

EVALUATION OF TREATMENT TECHNOLOGIES

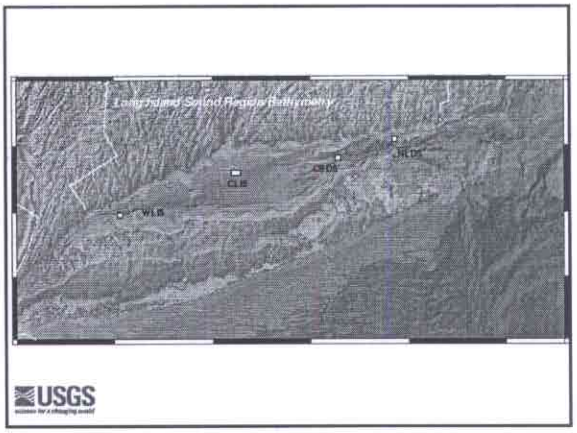
- REVIEW OF FEASIBILITY / PRACTICALITY OF CURRENT TECHNOLOGY
- SITE REQUIREMENTS / AVAILABILITY / ACCESSIBILITY
- IMPACTS
  - DISCHARGE OF CONTAMINANTS
  - NOISE
  - STABILITY OF PRODUCT
  - REDUCTION IN CONTAMINANT AVAILABILITY
  - DISPOSAL IMPACTS

DREW CAREY, ENSR TEAM (COASTAL VISION)

Environmental Evaluation: Finfish

- Resource Assessment
- Bioaccumulation
- Fishing Activities

ENSR CoastalVision

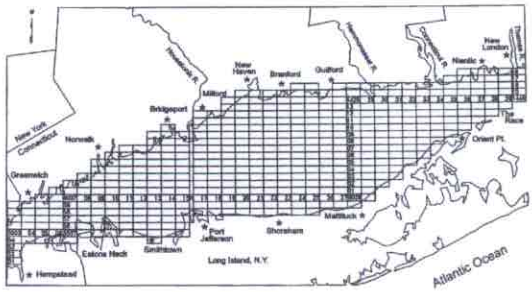


Fisheries Resources

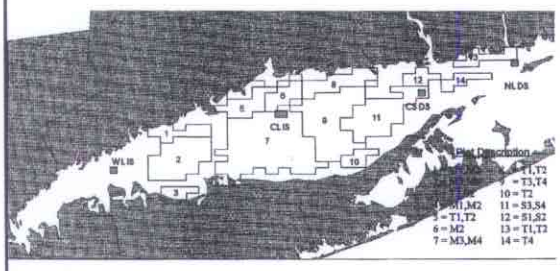
- Data from CTDEP Trawl surveys (1984-2000)
- Additional data from NMFS and RIDEM
- Investigate distinct "strata" and areas near disposal sites
  - Total CPUE (Catch Per Unit Effort)
  - Diversity/Richness (finfish, squid & lobsters)
  - CPUE of "important" species
  - Harvestable CPUE of commercial/recreational species
  - CPUE of juveniles and young of year (nursery habitat)

ENSR CoastalVision

Fisheries Resources



Fisheries Resources



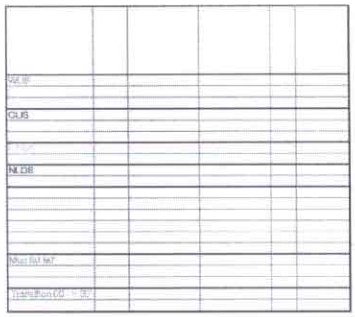
ENSR CoastalVision

Bioaccumulation

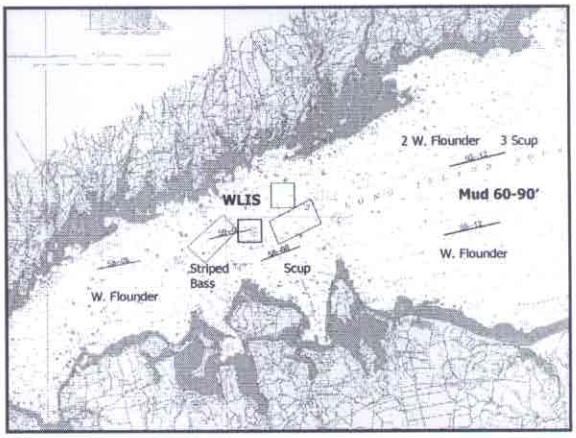
- Sample design: collect finfish from CTDEP trawl survey and commercial fishermen
- Sampling periods: June and September 2000
- Sample analysis: one replicate from each species per site
- Analysis: Metals, PAHs, PCBs, Dioxins, Furans, Pesticides, TBT, Radionuclides, Strontium 90

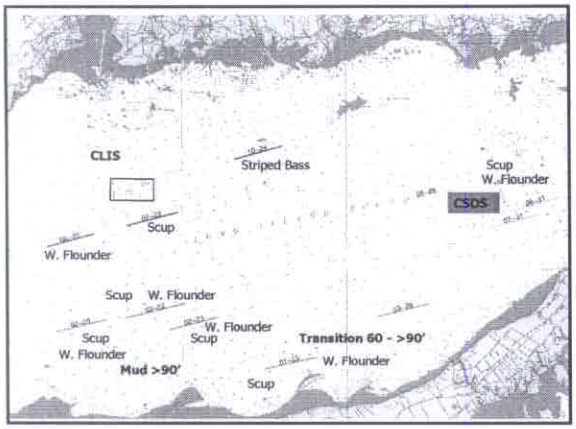
ENSR CoastalVision

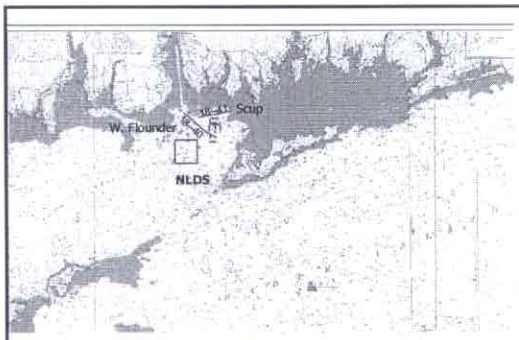
Tissue Sample Analysis



ENSR CoastalVision







Stations located in "trawlable" bottom used by local fishermen

ENSR CoastalVision

Fishing Activities

- Limited available data
- Volunteer Angler Survey
- Logbooks

ENSR CoastalVision

Questionnaire

- Commercial and Recreational
- Administered through organizations
- Reviewing design with representatives of Fishing Groups

ENSR CoastalVision

DAVID MITCHELL, ENSR

EPA

Long Island Sound EIS Benthic Tissue Collection

Dr. David F. Mitchell

ENSR

Acton, MA

ENSR

EPA

Purpose of Collection and Analysis:

- Establish baseline conditions of benthic (bottom) species tissue concentrations (body burdens)
- Provide additional data on food prey organisms for assessment or modeling of impacts to higher trophic organisms (e.g., fish, lobster)
- Assess potential impact of existing LIS dredged material disposal sites

ENSR

EPA

Survey Locations

- Feb.2000 survey at 4 dredged material sites for "opportunistic" benthic samples
- July 2000 survey - NLDS and CLIS only. Samples were collected in 3 areas representing current disposal area, historic disposal area and reference location
- At each location, samples of benthic fauna were collected for sorting, preservation, and analysis

ENSR

EPA

Benthic Fauna Collection

- Benthic (in-faunal) species were collected at NLDS and CLIS locations by ENSR staff
- At each location, sediment samples were taken, sieved and specimens collected
- Sediment processing and benthos collection continued until sufficient benthic biomass was collected (about 45 grams) for analyses.

ENSR

EPA

Benthic Tissue Analysis

- Biomass to be pooled and composited to comprise a "representative" sample - try to keep similar in terms of taxa or habitat
- May add samples from Feb. 2000 survey
- Analytes - metals, PCBs, pesticides, PAHs, dioxin/furans, dioxin-like PCBs
- Selected composites to be analyzed for tributyltin, radiochemistry (Cs, Co, U)

ENSR

EPA

Tissue Data Comparisons/Uses

- Compare tissue concentrations of benthos collected at NLDS and CLIS dredged disposal sites to reference locations
- Compare tissue concentrations with historic data from DAMOS program
- Look for "hot spots" and correlate with sediment chemistry and other biota
- Biological uptake (transfer from sediment to tissue) and food web modeling efforts

ENSR

EPA

Benthic Collection Results

- ENSR conducted survey July 10-12, 2000
- Sufficient benthic biomass collected at each station for analysis purposes
- Taxa collected comprised mainly of bivalves (clams) and polychaete worms
- ENSR, CENAE, and EPA to review survey data and reach consensus regarding how to composite tissue for analyses

ENSR

EPA

Benthic Results (continued)

- Bivalve species - *Pitar morrhuana (most common), Mercenaria mercenaria, Anadaria transversa, Yoldia limatula*
- Polychaete species - *Nephtys incisa (most common), Chaetopterus sp.*, Flabelligerids
- Both *Pitar* and *Nephtys* body burdens have been previously characterized in the Disposal Area Monitoring System (DAMOS) studies

ENSR

EPA

Supporting Benthic Investigations

- Benthic community structure and abundance assessed by winter (2/2000) and summer (7/2000) LIS surveys
- All dredged material disposal sites visited
- Benthic numbers and species richness (taxonomic composition) to be determined
- Two surveys provide useful natural range of biological activity at disposal sites

ENSR

EPA

Long Island Sound EIS
Lobster Tissue Collection

Dr. David F. Mitchell

ENSR

Acton, MA

ENSR

EPA

Purpose of Collection and Analysis:

- Establish baseline conditions for lobster tissue concentrations
- Assess potential impact of existing LIS dredged material disposal sites
- Address public concerns regarding the safety of lobsters for human consumption
- Provide additional data to CT DEP lobster fishery database

ENSR

EPA

LIS Lobster Health Issues

- Recent catastrophic die-off in western LIS considered a marine resource disaster
- Recognized that likely several factors are contributing to the lobster die-off
- Recent concerns voiced at Lobster Health Symposium (April 18-19, 2000)
- Potential factors include water quality, biological vectors, anthropogenic inputs

ENSR

EPA

LIS Lobster Health Issues (cont.)

- Water quality (water temperatures, dissolved oxygen, algal blooms)
- Biological (*Gaffkemia*, chitinoclastic black shell disease, paramoeba)
- Anthropogenic (malathion applications, STP effluent residuals, other sources - including dredged material disposal sites)
- All factors are under further investigation

ENSR

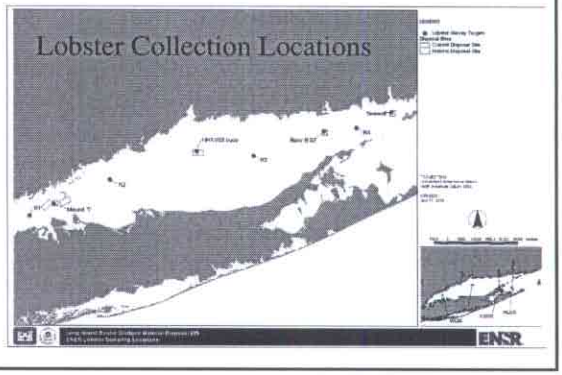
EPA

Sampling Locations

- Four dredged material disposal sites - WLIS, NLDS, CSDS, CLIS
- Site-specific reference locations (REF 1-4) located equidistant between disposal areas and CT/NY shorelines
- Off-shore reference location (REF 5) outside of LIS offshore of Hudson Canyon. REF 5 lobsters will be obtained via RIDEM

ENSR

EPA



ENSR

EPA

Lobster Collection

- Lobsters will be collected at locations by local lobstermen overseen by ENSR staff
- At each location 25* legal-sized lobsters will be collected for analysis
- Lobsters will be measured (carapace, rostrum), sexed, and examined for damage (lost claw) and shell condition
- Lobsters will be dissected and frozen

ENSR

EPA

Lobster Tissue Analysis

- Individual lobsters will be composited (5 lobsters) for 5 composite samples/station
- Tail/claw meat and hepatopancreas (tomalley) will be analyzed separately
- Analytes - metals, PCBs, pesticides, PAHs, dioxin/furans, dioxin-like PCBs
- Selected composites to be analyzed for tributyltin, radiochemistry (Cs, Co, U) and carapace Sr

ENSR

EPA

Tissue Data Comparisons

- Compare tissue concentrations of lobsters collected at dredged material disposal sites to levels in lobster at reference sites
- Compare LIS reference sites (REF 1-4) to off-shore (REF 5)
- Look for east-west LIS trends in data
- Look for "hot spots" and correlate with sediment chemistry and other biota.

ENSR

EPA

Lobster Collection Schedule

- ENSR arranging with local lobstermen to set traps this week
- ENSR staff will accompany lobstermen to assure GPS location and chain-of-custody
- Lobster collection at CSDS likely to be more problematic due to unsuitable habitat
- Lobster collection to be completed within next 4 weeks (i.e., by end of August)

ENSR

APPENDIX D

ATTENDEES

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Long Island Sound Dredged Material Disposal EIS
Working Group Meeting
Connecticut DP, Marine Headquarters
Old Lyme, CT

July 19, 2000

ATTENDEES

Last Name	First Name and MI	Affiliation	Address	Phone No.	FAX/EMAIL
Brewer	Jack	Brewer Yacht Yards	155 East Boston Post Rd. Mamaronock, NY 10543	914-698-0295	Jack@byy.com
Bryan	Barry	Fishers Island Conservancy	Box 197 Fishers Island NY 06390	631-788-7166	631-788-7466
Cashin	Vincent	CT. State Marine Pilots	500 Waterfront St New Haven CT 06512, 9 Nottingham Dr., Old Lyme, CT	203-468-0255, 860-434-0398	860-434-1441, ctpilot@erols.com
Chytalo	Karen	NYSDEC	E. Setawket, NY	631-444-0468	knchytal@gw.dec.state.ny.us
D'Estand	Nancy	Citizens Against Riveredge Exploration (CARE)	PO Box 602, Old Mystic, CT 06378	860-536-3325	
Fromer	Robert		PO Box 697, New London, CT 06320		RFROMER@snet.net
Gash	William	Connecticut Maritime Coalition, Inc.	165 State Street, Suite 402, New London CT 06330	860-448-2000 Ext. 13	860-437-8310, bgash@msn.com
Jones	Keith	Brookhaven National Laboratory	Brookhaven National Laboratory, Bldg 901A Upton NY 11973	631-344-4588	kwj@bnl.gov
Karel	Bradford	Marin Environmental, Inc.	7 Island Dock Road, Haddam CT 06438	860-345-4578	bradk@marinenv.com
Kelly	Allen and Bo		PO Box 166, Fishers Island, NY 06390	631-788-7830	Bkelly6313@aol.com
Kral	Rick	Beacon Point Marine/CME-CMTA	49 River Road, Cos Cob CT 06807	203-661-4033	CKRAL@javanet.com

Long Island Sound Dredged Material Disposal EIS
Working Group Meeting
Connecticut DP, Marine Headquarters
Old Lyme, CT

July 19, 2000

ATTENDEES

Last Name	First Name and MI	Affiliation	Address	Phone No.	FAX/EMAIL
Malloy	Janet	Thames Dredge and Dock	PO Box 791, New London, CT 06320	860-437-7546	
McGinley	Rick	Grove Beach Pt. Assn, West Bank CT	92 High Street Portland CT 06480	860-342-1325	
McMahon	John	Bruce and Johnsons Marina	37 Whiting Farm Road, Branford CT 06405	203-488-8329	203-488-5010
McMichael	Howard	McMichael Yacht Yards			914-381-5900
McPherson	John	Spicer's Marinas	93 Marsh Road, Noank CT 06340	860-536-1246	
Natchez	Daniel	Daniel A. Natchez & Associates, ROW, CHA	916 East Boston Post Road, Mamaronock NY 10543	914-698-5678	914-698-7321
Purnell	Marguerite	Fishers Island Conservancy	5 Old Litchfield Road, Washington CT 06793	860-868-6624	860-868-6042, Mpurnell@snet.net
Reiser	Matt	Marin Environmental, Inc.	7 Island Dock Road, Haddam CT 06438	860-345-4578	mreiser@marinenv.com
Sailer	Edward	Sailer Environmental Inc. and Connecticut Marine Trades Assoc.	One Orchard Park Rd. PO Box 21, Madison CT 06443	203-245-7744	203-245-2422, sailerct@connix.com
Schieferdecker	Walter	Associated Dock Builders, Essex Island Marina, Essex, CT	Foot of Ferry Street Essex CT 06426	860-767-1267	860-767-0075
Shadel	Bill	Save the Sound, Inc.		203-327-9786	wshadel@zoo.uvm.edu
Spicer	Bill	Spicer's Marinas		860-536-4978	
Thalhauser	Jenifer	Save the Sound, Inc.		203-327-9786	savethesound@snet.net
Thatcher	John		Fishers Island, NY		631-788-7021

Long Island Sound Dredged Material Disposal EIS
Working Group Meeting
Connecticut DP, Marine Headquarters
Old Lyme, CT

July 19, 2000

ATTENDEES

Last Name	First Name and MI	Affiliation	Address	Phone No.	FAX/EMAIL
Tristine	Marty		100 Waterfront St., New Haven, CT	203-468-4330	203-469-0905, mtristin@logistec.com
Westerson	Grant	CT Marine Trades Assn.	20 Plain Road Essex CT 06426-1501	860-767-2645	860-767-3559

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APPENDIX E

COMMENT LETTERS

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OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 5

To Pete Jackson	From Ann Rodney
Dept./Agency US ACOE	Phone # 617-918-1538
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9/14/00

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roup Meeting #1
Connecticut DEP, Marine Headquarters
Old Lyme, CT
July 19, 2000

At public workshops held in April 2000 in Port Jefferson, NY and Groton, CT, the public was invited to participate in working groups in the development of the LIS Dredged Material Disposal Site Designation EIS. Those who volunteered were subsequently invited to attend a meeting to be held in Old Lyme, CT on July 19, 2000. The meeting was arranged by Ann Rodney, EPA by a notice dated June 20, 2000 (copy attached). As noted in this invitation the Corps and EPA decided that there will be only one working group to discuss all topics. This is the first working group meeting since the April meetings in Port Jefferson and Groton.

The purpose of the meeting was to present and discuss the economic and environmental approaches (agenda attached) being taken to: the selection of alternatives to be analyzed in the EIS; the information to be analyzed in the characterization of the existing environment; the no action alternative; and the analysis of impacts.

Thirty six people including presenters attended (see attached sign-in sheet).

Ann Rodney facilitated the meeting and began with a brief discussion about the evaluation criteria scoring ballots that were received which had been provided at the April workshop. Many had commented that the criteria chosen in the ballots were appropriate but that the scoring was unclear. Ann indicated that the scoring will not be used as a statistical measure but as a theme or an overview. Also, we need more diversity from marine and environmental interests on the working group. There may be some recruitment effort to bring in more diversity.

Following each presentation the floor was opened to questions, comments and other discussion. The following lists questions raised by working group members in italic and responses, if given, in normal type face. In some instances no responses were necessary and the comments will be considered in the development of the EIS. The morning session covered the approach to the economic analyses and the afternoon session, the approach to the environmental analyses.

Economics Presentation – Ed O'Leary, Corps of Engineers, New England District
The major tasks are (a copy of the complete presentation is attached):
1. Identification of Navigation Dependent Facilities – 100%
2. Survey of Facilities – Phone, mail, in person
3. Determination of Dredging Needs and Future Quantities
4. Estimate Economic Significance of Navigation Dependent Facilities - Model
5. Conduct Analysis of Socioeconomic Impacts of Disposal
6. Prepare Economic Appendix and Socioeconomic Portions of DEIS

7. 100% of existing facilities will be surveyed. What about the future?
The EPA and the Corps will factor in future dredging plans for the surveyed facilities. The EIS will also review permit applications pending, and community coastal area management, harbor management and master plans in the identification of potential future needs.

8. Connecticut River dredged material is not currently going to LIS sites. In the future riverine dumping will not be allowed. This is a major navigation channel. Will the economic study cover the Connecticut River?
The Connecticut River, below Hartford, will be included as part of this study. The EIS will factor in this issue since historic practices, mostly upland, may no longer be feasible.

9. A reality check is needed for the questionnaire to be used. Experience shows that respondents may not bother or may respond in a way to influence decisions to their benefit. Make it simple and try it out on someone unfamiliar with the study. The questions may lead with a cost such as what would you do if the dredging cost was a $ X per cubic yard. Using zero is as unrealistic as is a high number. The economic results may show overinflated estimates from the surveys which may result in very large disposal needs. The costs may be so high that projects may be pushed off into the future. There is a concern that the questionnaire could be flawed yielding statistical errors. What is the quality control for the survey? Some people will not talk to the surveyors.
We may use a range of costs. We need to get a clear picture of what the dredging needs are regardless of costs as well as a prediction of what dredging will likely be done at different cost levels. If there is a perception that the result may put them out of business then their response, if any, will not be realistic. We plan to test the questions in a pilot study before general use

10. Academic institutions (e.g. University of Michigan, University of Oregon) have tried and true economic models including those for small harbors. Why not use those? Also, there have been economic studies done for LIS.
The subcontractor will check existing studies and model results from others.

11. *There is a continuous ratcheting of criteria up or down. One disposal site may work now but not be allowed later. The criteria and testing keeps changing. This needs to be a factor in the economic evaluation.*
The costs of testing will be taken into account within the economic information.

12. The economic study must look at the life cycle over 20, 30, 50 years. Work everything back to present value.
That approach is used by the Corps. An economic projection to year 2025 is envisioned.

13. Energy costs are important and must be factored into the life cycle model.
Energy costs, as factored into the costs of disposal (e.g. transportation costs) are included in the analyses.

14. Rising sea level must be factored into the life cycle economics. Erosion and a 1 ft sea rise in 50 to 100 years may reduce dredging or increase it. Someone may have to revisit the economic

be full and now it is empty. All costs are going up including dredging. Marinas will go out of business. In NJ a number of marinas have become single homes. The cycle of dredging is important and varies considerably from harbor to harbor.
Comment is noted.

24. Maintaining LIS' deep ports is a must. This is needed to keep navigation safe and keep oil prices from going up due to offloading and other measures. Other ports are going deeper to 40 or 50 feet. CT ports are having a hard time maintaining 35 feet. Maintenance is needed just to remain competitive.
Comment is noted.

25. Real estate values have remained somewhat level. Conversions to condos should not be an issue due to restrictions. If marinas go out of business the property would probably go to single-family or two-family homes.
Comment is noted.

26. Will the economic analysis consider the case where shipping shuts down and alternative transportation is substituted?
Yes.

Environmental Presentations

Overview by Dave Tomey, EPA Region 1
The major points are (copy of presentation attached):
1. Open Water Sites -
2. Upland/Beneficial Use Sites
3. Evaluation of Treatment Technologies

Fish by Drew Carey, Coastal Vision
The major points are (copy of presentation attached):
Environmental Evaluation – finfish
1. Fisheries Resources – CT DEP data available as well as NY, RI and NMFS. A NOAA report was just released for 1984 –94. There is a better method of bottom classification as it relates to finfish utilization. The CT trawl data does not cover all areas of LIS. Some areas can not be trawled because of fixed gear, bottom conditions etc. They use a 1 mile by 2 mile grid. Results are grouped by areas of similar physical conditions. Our study will supplement the CT DEP work.
2. Bioaccumulation
3. Fishing Activities – The questionnaire has been developed but we don't anticipate much work during the summer when fishermen are busy. We will try to work through the various organizations to get results.

Finfish Approach Questions and Discussion

FISHERS ISLAND CONSERVANCY, INC.

BOX 553
FISHERS ISLAND, NEW YORK 06390

by FAX to 617-918-1505 9/21/00

Ms. Ann Rodney
U.S. E.P.A. - New England Region
1 Congress Street,
Suite 1100, CWQ
Boston, MA. 02114-2023

(comments on draft as per your request. Draft was received on 9/12/00).

Dear Ann:

Just a brief but important comment on your draft summary of proceedings on Workshop No. 1 in Old Lyme, Connecticut which took place several months ago (7/19/00). At that time, a member of the Fishers Island Conservancy made a specific reference to the lack of any data whatever regarding the effect on the bottom of the New London Disposal Site (NLDS) of water turbulence caused by the churning giant propellors of deep draft vessels passing directly overhead across the disposal site. These huge propellors (often over 15 feet in diameter) whether on submarines or other big ships entering New London harbor, pass only 15 feet or so above the bottom of the relatively shallow New London Disposal Site, which is placed directly in front of the main navigation channel into New London harbor. We are very concerned about the effects of such turbulence on possible re-suspension of capping material shielding the contaminated dredge material underneath, and indeed in many cases possibly re-suspendin the contaminated dredge material itself, especially in areas where the cap material has been worn away by strong currents, storm waves, or propelllor turbulence such as that referred to above.

Regretfully, we find no direct reference to our concern given in the question and answer summaries of your draft report. Item No.# 16 slides away from giving any direct answer to our concerns, nor does the draft text give a fair and accurate picture of our worries at the lack of test data on this matter. Our request in this FAX letter is to please correct the record for the final version of these proceedings. In addition, the E.P.A. should consider taking needed sequential action - i.e. run tests to show to the general public and the environmental community what effect such deep, and churning propellor wash has on either the stability of bottom sediments, or on the development of food chain creatures (lobsters, flounder, etc.) that primarily live on the bottom of Long Island Sound. Such testing is surely needed, as is a properly recorded statement of our concern.

We hope you will favor us with a reply. Sincerely,

John H. Thatcher Jr. - President

Grove Beach Point Association Inc.
P.O. Box 754 Westbrook, Ct. 06498

US EPA - New England Region
1 Congress Street
Suite 1100, CWQ
Boston, MA 02114-2023
Attn.. Ann Rodney

September 10, 2000

Dear Ann;

I have not had the pleasure to speak with you at the meetings I have attended, so I decided to put into writing some of my thoughts.

We as a beach association offer no opposition to dredge projects designed to maintain marinas and navigable waterways, we are in favor of recreational and commercial water uses. Our main concern is that those operations create no nuisance to surrounding beaches and that the spoils from those operations are used in a manner that makes the utmost sense, first to beaches, and second to upland projects.

Protection of property at the shoreline is of significant importance, whether public or private, public properties are created and maintained by tax dollars, private properties pay significant taxes which ultimately benefit the public.

We waste too much time determining whether something is public or private, when the real issue is whether or not there is real value to everyone if all our beaches are in as good a condition as possible.

Beaches are a thing of beauty, they have wonderful recreational value, and they are of utmost importance to storm protection.

Beaches play such an important role in our economy and ecosystem, they should always be considered when a dredge project is proposed.

Beach Preservation Committee
Rick McGinley Chairman

Rick D. McGinley Chairman

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